

Chapter 15

1. Aguilar M, Bhuket T, Torres S, Liu B, and Wong RJ. Prevalence of the metabolic syndrome in the United States, 2003–2012. *JAMA* 313: 1973–1974, 2015.
2. American Cancer Society. *Cancer Facts and Figures 2019*. Atlanta, GA: American Cancer Society; 2019.
3. American College of Sports Medicine. *ACSM's Guidelines for Exercise Testing and Prescription*. Philadelphia, PA: Lippincott Williams & Wilkins, 2014.
4. American College of Sports Medicine and American Diabetes Association. Exercise and type 2 diabetes. *Medicine & Science in Sports & Exercise* 42: 2282–2303, 2010.
5. American Diabetes Association. Classification and diagnosis of diabetes. *Diabetes Care* 39: S13–S22, 2016.
6. American Heart Association. Statement on exercise. Benefits and recommendations for physical activity programs for all Americans. A statement for health professionals by the Committee on Exercise and Cardiac Rehabilitation of the Council on Clinical Cardiology, American Heart Association. *Circulation* 86: 340–344, 1992.
7. American Heart Association. Women and cardiovascular diseases—statistics. <http://americanheart.org/presenter.jhtml?identifier=3000941>, 2010.
8. Barnes J. Sex specific factors regulating pressure and flow. *Experimental Physiology* 11: 1385–1392, 2017.
9. Bateman LA, Slentz CA, Willis LH, Shields AT, Piner LW, Bales CW, et al. Comparison of aerobic versus resistance exercise training effects on metabolic syndrome (from the Studies of a Targeted Risk Reduction Intervention Through Defined Exercise—STRRIDEAT/RT). *American Journal of Cardiology* 108: 838–844, 2011.
10. Beaglehole R, Bonita R, and Kjellström T. *Basic Epidemiology*. Geneva: World Health Organization, 1993.
11. Beavers KM, Ambrosius WT, Nicklas BJ, and Rejeski WJ. Independent and combined effects of physical activity and weight loss on inflammatory biomarkers in overweight and obese older adults. *Journal of the American Geriatrics Society* 61: 1089–1094, 2013.
12. Beavers KM, Hsu F-C, Isom S, Kritchevsky SB, Church T, Goodpaster B, et al. Long-term physical activity and inflammatory biomarkers in older adults. *Medicine & Science in Sports & Exercise* 42: 2189–2196, 2010.
13. Blair SN, Smith GD, Lee IM, Fox K, Hillsdon M, McKeown RE, et al. A tribute to Professor Jeremiah Morris: the man who invented the field of physical activity epidemiology. *Annals of Epidemiology* 20: 651–660, 2010.
14. Booth FW, Roberts CK, and Laye MJ. Lack of exercise is a major cause of chronic diseases. *Journal of Comparative Physiology* 2: 1143–1211, 2012.
15. Bouchard C, Shephard R, Stevens T, Sutton J, and McPherson B. Exercise, fitness, and health: the consensus statement. In *Exercise, Fitness, and Health*, edited by Bouchard C, Shephard RJ, Stevens T, Sutton JR, and McPherson BD. Champaign, IL: Human Kinetics, 1990, pp. 3–28.
16. Brandt C and Pedersen BK. The role of exercise-induced myokines in muscle homeostasis and the defense against chronic disease. *Journal of Biomedicine and Biotechnology* Article ID: 520258, 2010.
17. Buckley DI, Fu R, Freeman M, Rogers K, and Helfand M. C-reactive protein as a risk factor for coronary heart disease: a systematic review and meta-analysis for the U. S. Preventive Services Task Force. *Annals of Internal Medicine* 151: 483–495, 2009.
18. Campaign BN. Exercise and diabetes mellitus. In: *ACSM's Resource Manual for Guidelines for Graded Exercise Testing and Prescription*. Baltimore, MD: Lippincott Williams & Wilkins, 2001, pp. 277–284.
19. Centers for Disease Control and Prevention. National Diabetes Statistics Report, 2017. Atlanta, GA: Centers for Disease Control and Prevention, U.S. Dept of Health and Human Services; 2017.
20. Church TS. Exercise in obesity, metabolic syndrome, and diabetes. *Progress in Cardiovascular Diseases* 53: 412–418, 2011.
21. Church TS, Earnest CP, Thompson AM, Priest EL, Rodarte RQ, Saunders T, et al. Exercise without weight loss does not reduce c-reactive protein: the INFLAME study. *Medicine & Science in Sports & Exercise* 42: 708–716, 2010.
22. Danaei G, Ding EL, Mozaffarian D, Taylor B, Rehm J, Murray CJL, et al. The preventable causes of death in the United States: comparative risk assessment of dietary, lifestyle, and metabolic factors. *PLOS Medicine* 6: e1000058, doi:10.1371, 2009.
23. Després J-P. Abdominal obesity and cardiovascular disease: is inflammation the missing link? *Canadian Journal of Cardiology* 28: 642–652, 2012.
24. Ebrahim S, Taylor F, Ward K, Beswick A, Burke M, and Smith GD. Multiple risk factor interventions for primary prevention of coronary heart disease. *Cochrane Database System Reviews* 1: CD001561, 2011.
25. Esposito K, Marfella R, Ciotola M, Di Palo C, Giugliano F, Giugliano G, et al. Effect of a Mediterranean-style diet on endothelial dysfunction and markers of vascular inflammation in the metabolic syndrome. *JAMA* 292: 1440–1446, 2004.
26. Ferrari R, Umpierre D, Vogel G, Vieira P, Santos L, de Mello R, et al. Effects of concurrent and aerobic exercise on postexercise hypotension in elderly hypertensive men. *Experimental Gerontology* 98: 1–7, 2017.
27. Fox, SI. *Human Physiology*. New York, NY: McGraw-Hill, 2011.
28. Gill J, Herd S, Vora V, and Hardman A. Effects of a brisk walk on lipoprotein lipase activity and plasma triglyceride concentrations in the fasted postprandial states. *European Journal of Applied Physiology* 89: 184–190, 2003.
29. Gleeson M, Bishop NC, Stensel DJ, Lindley MR,

- Mastana SS, and Nimmo MA. The anti-inflammatory effects of exercise: mechanisms and implications for the prevention and treatment of disease. *Nature Reviews Immunology* 11: 607–615, 2011.
30. Golbidi S, Mesdaghinia A, and Laher I. Exercise and the metabolic syndrome. *Oxidative Medicine and Cellular Longevity* Volume 2012, No. 349710.
31. Grattagliano I, Palmieri VO, Portincasa P, Moschetta A, and Palasciano G. Oxidative stress-induced risk factors associated with the metabolic syndrome: a unifying hypothesis. *The Journal of Nutritional Biochemistry* 19: 491–504, 2008.
32. Guan J, Khambhati J, Jones L, Morgans A, Allaf M, Penson D., et al. ABCDE steps for heart and vascular wellness following a prostate cancer diagnosis. *Circulation* 132: 218–220, 2015.
33. Gui Y, Liao C, Liu Q, Gou Y, Yang T, Chen J, et. al. Efficacy and safety of statins and exercise combination therapy compared to statin monotherapy in patients with dyslipidemia: A systematic review and meta-analysis. *Preventive Cardiology* 24: 907–916, 2017.
34. Gustafson B. Adipose tissue, inflammation and atherosclerosis. *Journal of Atherosclerosis and Thrombosis* 17: 332–341, 2010.
35. Hales C, Carroll M, Fryar C, and Ogden C. Prevalence of obesity among adults and youth: United States 2015–2016. *National Center for Health Statistics* 288: 1–8, 2017. Heron M. Deaths: Leading causes for 2016. *National Vital Statistics Reports* 67: 1–77, 2016.
36. Hall C, Cook J, Maddocks M, Skipworth R, Fallon M, and Laird B. Combined exercise and nutritional rehabilitation in outpatients with incurable cancer: a systematic review. *Supportive Care in Cancer* 27: 2371–2384, 2019.
37. Heron M. Deaths: leading causes for 2016. *National Vital Statistics Reports* 67: 1–77, 2016.
38. Hilfiker R, Meichtry A, Eicher M, Nilsson L, Knols R, Vera M, et al. Exercise and other nonpharmaceutical interventions for cancer-related fatigue in patients during or after cancer treatment: a systematic review incorporating an indirect-comparison meta-analysis. *British Journal of Sports Medicine* 52: 651–658, 2018.
39. Hardman WE. Diet components can suppress inflammation and reduce cancer risk. *Nutrition Research and Practice* 8(3): 233–240, June 2014; doi: 10.4162/nrp.2014.8.3.233. Epub 2014 May 15
40. Imayama I, Ulrich CM, Alfano CM, Wang CC, Xiao LR, Wener MH, et al. Effects of a caloric restriction weight loss diet and exercise on inflammatory biomarkers in overweight/obese postmenopausal women: a randomized controlled trial. *Cancer Research* 72: 2314–2326, 2012.
41. Kasaniemi YA, Danforth JE, Jensen MD, Kopelman PG, Lefebvre P, and Reeder BA. Dose-response issues concerning physical activity and health: an evidence-based symposium. *Medicine & Science in Sports & Exercise* 33 (Suppl): S351–358, 2001.
42. Khan K, Mazuquin B, Canaway A, Petrou S, and Bruce J. Systematic review of economic evaluations of exercise and physiotherapy for patients treated for breast cancer. *Breast Cancer Research and Treatment* 176: 37–52, 2019.
43. Lakka TA and Laaksonen DE. Physical activity in prevention and treatment of the metabolic syndrome. *Applied Physiology, Nutrition, and Metabolism* 32: 76–88, 2007.
44. Lavie CJ, Church TS, Milani RV, and Earnest CP. Impact of physical activity, cardiorespiratory fitness, and exercise training on markers of inflammation. *Journal of Cardiopulmonary Rehabilitation and Prevention* 31: 137–145, 2011.
45. Libby P. Atherosclerosis: the new view. *Scientific American* May 2002: 46–55, 2002.
46. Libby P, Okamoto Y, Rocha VZ, and Folco E. Inflammation in atherosclerosis. *Circ J* 74: 213–220, 2010.
47. Libby P, Ridker PM, and Maseri A. Inflammation and atherosclerosis. *Circulation Journal* 105: 1135–1143, 2002.
48. MacMahon B and Pugh T. *Epidemiology*. Boston, MA: Little, Brown, 1970.
49. Mann S, Beedie C, and Jimenez A. Differential effects of aerobic exercise, resistance training, and combined exercise modalities on cholesterol and the lipid profile: review, synthesis, and recommendations. *Sports Medicine* 44: 211–221, 2014.
50. Mathur N and Pedersen BK. Exercise as a means to control low-grade systemic inflammation. *Mediators of Inflammation* 2008: 1–6, 2008.
51. McTiernan A, Friedenreich C, Katzmarzyk P, Powell K, Macko R, Buckner D, et al. Physical activity and cancer prevention and survival: A systematic review. *Medicine and Science in Sports and Exercise* 51: 1252–1261, 2019.
52. McGinnis G, Ballmann C, Peters B, Nanayakkara G, Roberts M, Amin R, et al. Interleukin-6 mediates exercise preconditioning against myocardial ischemia reperfusion injury. *American Journal of Physiology Heart and Circulatory Physiology* 308: 1423–1433, 2015.
53. Mokdad AH, Marks JS, Stroup DF, and Gerberding JL. Actual causes of death in the United States, 2000. *JAMA* 291: 1238–1245, 2004.
54. Mokdad AH, Marks JS, Stroup DF, and Gerberding JL. Correction: actual causes of death in the United States, 2000. *JAMA* 293: 293–294, 2005.
55. Moller A, Lonbro S, Farup J, Voss T, Rittig N, Wang J, et al. Molecular and cellular adaptations to exercise training in skeletal muscle cancer patients treated with chemotherapy. *Journal of Cancer Research and Clinical Oncology* 145: 1449–1460, 2019.
56. Monteiro R and Azavedo I. Chronic inflammation in obesity and the metabolic syndrome. *Mediators of Inflammation* Article ID 289645, 2010.

57. Morris JN, Chave SP, Adam C, Sirey C, Epstein L, and Sheehan DJ. Vigorous exercise in leisure-time and the incidence of coronary heart-disease. *Lancet* 1: 333–339, 1973.
58. Morris JN, Heady JA, Raffle PA, Roberts CG, and Parks JW. Coronary heart disease and physical activity of work. *Lancet* 265: 1111–1120; concl, 1953.
59. National Heart Blood and Lung Institute. Third Report of the National Cholesterol Education Program (NCEP) Expert Panel. Detection, evaluation, and treatment of high blood cholesterol in adults (Adult Treatment Panel III) executive summary. NIH Publication No. 02–5285, 2002.
60. Nimmo MA, Leggate M, Viana JL, and King JA. The effect of physical activity on mediators of inflammation. *Diabetes, Obesity and Metabolism* 15 (Suppl. 3): 51–60, 2013.
61. Paffenbarger RS, Jr., Blair SN, and Lee I-M. A history of physical activity, cardiovascular health and longevity: the scientific contributions of Jeremy N. Morris, DSc, DPH, FRCP. *International Journal of Epidemiology* 30: 1184–1192, 2001.
62. Paffenbarger RS, Jr., Hyde RT, Wing AL, Lee IM, Jung DL, and Kampert JB. The association of changes in physical-activity level and other lifestyle characteristics with mortality among men. *The New England Journal of Medicine* 328: 538–545, 1993.
63. Paffenbarger RS, Jr., Laughlin ME, Gima AS, and Black RA. Work activity of longshoremen as related to death from coronary heart disease and stroke. *The New England Journal of Medicine* 282: 1109–1114, 1970.
64. Palmefors H, DuttaRoy S, Rundqvist B, and Borjesson M. The effect of physical activity or exercise on key biomarkers in atherosclerosis—A systematic review. *Atherosclerosis* 235: 150–161, 2014.
65. Pate RR, Pratt M, Blair SN, Haskell WL, Macera CA, Bouchard C, et al. Physical activity and public health. A recommendation from the Centers for Disease Control and Prevention and the American College of Sports Medicine. *JAMA* 273: 402–407, 1995.
66. Peddie M, Rehrer, N, and Perry T. Physical activity and postprandial lipemia: are energy expenditure and lipoprotein lipase activity the real modulators of the positive effect?. *Progress in Lipid Research* 51: 11–22, 2012.
67. Pedersen BK. Anti-inflammatory effects of exercise: role in diabetes and cardiovascular disease. *European Journal of Clinical Investigation* 45: 600–611, 2017.
68. Pedersen BK. Edward F. Adolph distinguished lecture: muscle as an endocrine organ: IL-6 and other myokines. *Journal of Applied Physiology* 107: 1006–1014, 2009.
69. Powell KE, Thompson PD, Caspersen CJ, and Kendrick JS. Physical activity and the incidence of coronary heart disease. *Annual Review of Public Health* 8: 253–287, 1987.
70. Powell KE, Paluch AE, and Blair SN. Physical activity for health: what kind? How much? How intense? On top of what? *Annual Review of Public Health* 32: 349–365, 2011.
71. Powers SK, Smuder AJ, Kavazis AN, and Quindry JC. Mechanisms of exercise-induced cardioprotection. *Physiology* 29: 27–38, 2014.
72. Rana JS, Nieuwdorp M, Jukema JW, and Kastelein JJP. Cardiovascular metabolic syndrome—an interplay of obesity, inflammation, diabetes and coronary heart disease. *Diabetes, Obesity and Metabolism* 9: 218–232, 2007.
73. Reid M. Redox interventions to increase exercise performance. *Journal of Physiology* 594: 5125–5133, 2016.
74. Reinehr T. Type 2 diabetes melitus in children and adolescents. *World Journal of Diabetes* 4: 270–281, 2013.
75. Richard C, Couture P, Desroches S, and Lamarche B. Effect of the Mediterranean diet with and without weight loss on markers of inflammation in men with metabolic syndrome. *Obesity* 21: 541–557, 2013.
76. Ringseis R, Eder K, Mooren FC, Krüger K. Metabolic signals and innate immune activation in obesity and exercise. *Exercise Immunology Review* 21: 58–68, 2015.
77. Rizvi AA. Hypertension, obesity, and inflammation: the complex designs of the deadly trio. *Metabolic Syndrome and Related Disorders* 8: 287–294, 2010.
78. Roberts CK and Sindhu KK. Oxidative stress and the metabolic syndrome. *Life Sciences* 84: 705–712, 2009.
79. Rockett I. Population and health: an introduction to epidemiology. *Population Bulletin Journal* 49: 1–48, 1994.
80. Ross R, Dagnone D, Jones, P, Smith H, Paddags A, Hudson R, et al. Reduction in obesity and related comorbidity conditions after diet-induced weight loss or exercise-induced weight loss in men. A randomized control trial. *Annals of Internal Medicine* 133: 92–103, 2000.
81. Ruiz-Ramie J, Barber J, and Sarzynski M K. Effects of exercise on HDL functionality. *Current Opinion in Lipidology* 30: 16–23, 2019.
82. Stallones R. *Public Health Monograph* 76. Washington, DC: U.S. Government Printing Office, 1966.
83. Sturgeon K, Mathis K, Rogers C, Schmitz K, and Waning D. Cancer- and chemotherapy-induced musculoskeletal degradation. *Journal of Bone and Mineral Research* 3: 1–11, 2019.
84. Swift D, Johannsen N, Lavie C, Earnest C, and Church T. The role of exercise and physical activity in weight loss and maintenance. *Progress in Cardiovascular Disease* 56: 441–447, 2014.
85. Taylor S, Accili D, and Imai Y. Insulin resistance of insulin deficiency: which is the primary cause of NIDDM? *Diabetes* 43: 735–740, 1994.
86. Tuczu E, Kapadia S, Tutar E, Zaida K, Hobbs R, McCarthy P, et al. High prevalence of atherosclerosis in asymptomatic teenagers and young adults: Evidence from intravascular ultrasound. *Circulation* 103: 2705–2710, 2001.
87. U. S. Department of Health and Human Services.

Physical Activity and Health: A Report of the Surgeon General. Washington, DC: U.S. Government Printing Office, 1996.

88. U.S. Department of Health and Human Services. 2018 Physical activity guidelines for Americans 2nd edition

[https://health.gov/paguidelines/pdf/Physical_Activity_Guidelines_2nd_edition.pdf](https://health.gov/paguidelines/secondedition/pdf/Physical_Activity_Guidelines_2nd_edition.pdf)

89. U.S. Department of Health and Human Services. Physical Activity Guidelines Advisory Committee Report

2018. https://health.gov/paguidelines/second-edition/report/pdf/PAG_Advisory_Committee_Report.pdf

90. U.S. Department of Health and Human Services. Heart disease and African Americans. <http://minority-healthhhsgov/templates/content.aspx?ID=3018>, 2010.

91. U.S. Department of Health Education and Welfare.

Healthy People: The Surgeon General's Report on Health Promotion and Disease Prevention. Washington, DC: U.S. Government Printing Office, 1979.

92. van der Ploeg H and Hillsdon M. Is sedentary behavior

just physical inactivity by another name?

International

Journal of Behavioral Nutrition and Physical Activity 14: 1–8, 2017.

93. Wang Z and Nakayama T. Inflammation, a link between obesity and cardiovascular disease. Mediators of Inflammation Article ID 535918, 2010.

94. Wassink AM, Olijhoek JK, and Visseren FL. The metabolic syndrome: metabolic changes with vascular consequences. European Journal of Clinical Investigation 37: 8–17, 2007.

95. Whelton P, Carey R, Aronow W, Casey D, Collins K, et al., 2017 guideline for the prevention, detection, evaluation, and management of high blood pressure in adults. Hypertension, 71: 13-115, 2018.

96. You T, Arsenis NC, Disanzo BL, and LaMonte MJ. Effects of exercise training on chronic inflammation in obesity. Sports Medicine 43: 243–256, 2013.

97. Zheng G, Qui P, Xia R, Lin H, Ye B, Tao J et al. Effect of aerobic exercise on inflammatory markers in healthy middle-aged and older adults: a systematic review

and meta-analysis of randomized controlled trials,

Frontiers in Aging Neuroscience. 11: 1–9, 2019.

Chapter 16

1. Ainsworth B, Haskell W, Herrmann S, Meckes N, Bassett D, Tudor-Locke C, et al. 2011 compendium of physical activity: a second update of codes and MET values. Medicine and Science in Sports and Exercise 43:1575–1581, 2011.

2. American College of Sports Medicine. American

College of Sports Medicine position stand: the recommended quantity and quality of exercise for developing and maintaining cardiorespiratory and muscular fitness, and flexibility in healthy adults. Medicine & Science in Sports & Exercise 30: 975–991, 1998.

3. American College of Sports Medicine. Quantity and quality of exercise for developing and maintaining cardiorespiratory, musculoskeletal, and neuromotor fitness in apparently healthy adults: guidance for prescribing exercise. Medicine & Science in Sports & Exercise 43:1334–1359, 2011.

4. American College of Sports Medicine. Guidelines for Exercise Testing and Prescription. Baltimore, MD: Lippincott Williams & Wilkins, 2017.

5. American College of Sports Medicine. Progression models in resistance training for healthy adults. Medicine & Science in Sports & Exercise 41: 1510–1530, 2009.

6. American College of Sports Medicine. Progression models in resistance training for healthy adults. Medicine & Science in Sports & Exercise 34: 364–380, 2002.

7. American College of Sports Medicine. Summary statement: workshop on physical activity and public health. Sports Medicine Bulletin 28: 7, 1993.

8. American Heart Association. Statement on exercise: benefits and recommendations for physical activity programs for all Americans. A statement for health professionals by the Committee on Exercise and Cardiac Rehabilitation of the Council on Clinical Cardiology, American Heart Association. Circulation 86: 340–344, 1992.

9. Artero EG, Lee D-C, Lavie CJ, España-Romero V, Sui X, Church TS, et al. Effects of muscular strength on cardiovascular risk factors and prognosis. Journal of Cardiopulmonary Rehabilitation and Prevention 32: 351–358, 2012.

10. Åstrand PO and Saltin B. Maximal oxygen uptake and heart rate in various types of muscular activity. Journal of Applied Physiology 16: 977–981, 1961.

11. Bai Y, Welk G, Nam Y, Lee J, Lee J, Kim Y, Meier N, and Dixon P. Comparison of Consumer and Research Monitors under Semistructured Settings. Medicine and Science in Sports and Exercise 48: 151–158, 2016.

12. Bartlett JD, Close GL, Maclaren DPM, Gregson W, Drust B, and Morton JP. High-intensity running is perceived to be more enjoyable than moderate-intensity continuous exercise: implications for exercise adherence. Journal of Sport Sciences 29: 547–553, 2011.

13. Birk TJ and Birk CA. Use of ratings of perceived exertion for exercise prescription. Sports Medicine 4: 1–8, 1987.

14. Blair SN, Kohl HW, III, Barlow CE, Paffenbarger RS, Jr., Gibbons LW, and Macera CA. Changes in physical fitness and all-cause mortality: a prospective study of healthy and unhealthy men. JAMA 273: 1093–1098, 1995.

15. Blair SN, Kohl HW, III, Paffenbarger RS, Jr., Clark

- DG, Cooper KH, and Gibbons LW. Physical fitness and all-cause mortality: a prospective study of healthy men and women. *JAMA* 262: 2395–2401, 1989.
16. Buchheit M and Laursen PB. High-intensity interval training, solutions to the programming puzzle. Part I: Cardiopulmonary emphasis. *Sports Medicine* 43: 313–338, 2013.
 17. Buchheit M and Laursen PB. High-intensity interval training, solutions to the programming puzzle. Part II: Anaerobic energy, neuromuscular load and practical applications. *Sports Medicine* 43: 927–954, 2013.
 18. Burgomaster KA, Hughes SC, Heigenhauser GJF, Bradwell SN, and Gibala MJ. Six sessions of sprint interval training increases muscle oxidative potential and cycle endurance capacity in humans. *Journal of Applied Physiology* 98: 1985–1990, 2005.
 19. Campbell W, Kraus W, Powell K, Haskell W, Janz K, Jakicic J, et al. High-intensity interval training for cardiometabolic disease prevention. *Medicine and Science in Sports and Exercise* 51: 1220–1226, 2019.
 20. Caspersen CJ, Powell KE, and Christenson GM. Physical activity, exercise, and physical fitness: definitions and distinctions for health-related research. *Public Health Reports* 100: 126–131, 1985.
 21. Cavanagh PR. *The Running Shoe Book*. Mountain View, CA: Anderson World, 1980.
 22. Cavero-Redondo I, Tudor-Locke C, Alvarez-Bueno C, Cunha P, Aguiar E, and Martinez-Vizcaino V. Steps per day and arterial stiffness. *Hypertension* 73: 350–363, 2019.
 23. Ceci R and Hassmen P. Self-monitored exercise at three different RPE intensities in treadmill vs field running. *Medicine & Science in Sports & Exercise* 23: 732–738, 1991.
 24. Chow RJ and Wilmore JH. The regulation of exercise intensity by ratings of perceived exertion. *Journal of Cardiac Rehabilitation* 4: 382–387, 1984.
 25. Church TS, Earnest CP, Skinner JS, and Blair SN. Effects of different doses of physical activity on cardiorespiratory fitness among sedentary, overweight or obese postmenopausal women with elevated blood pressure: a randomized controlled trial. *JAMA* 297: 2081–2091, 2007.
 26. Dionne FT, Turcotte L, Thibault MC, Boulay MR, Skinner JS, and Bouchard C. Mitochondrial DNA sequence polymorphism, $\dot{V}O_2$ max, and response to endurance training. *Medicine & Science in Sports & Exercise* 23: 177–185, 1991.
 27. Duncan GE, Howley ET, and Johnson BN. Applicability of $\dot{V}O_2$ max criteria: discontinuous versus continuous protocols. *Medicine & Science in Sports & Exercise* 29: 273–278, 1997.
 28. Faulkner JA, Roberts DE, Elk RL, and Conway J. Cardiovascular responses to submaximum and maximum effort cycling and running. *Journal of Applied Physiology* 30: 457–461, 1971.
 29. Franklin BA. Exercise testing, training and arm ergometry. *Sports Medicine* 2: 100–119, 1985.
 30. Galvao DA and Taaffe DR. Single- vs. multiple-set resistance training: recent developments in the controversy. *Journal of Strength and Conditioning Research/National Strength & Conditioning Association* 18: 660–667, 2004.
 31. Gayda M, Ribeiro PAB, Juneau M, and Nigam A. Comparison of different forms of exercise training in patients with cardiac disease: where does high-intensity interval training fit? *Canadian Journal of Cardiology* 32: 485–494, 2016.
 32. Gellish RL, Goslin BR, Olson RE, McDonald A, Russi GD, and Moudgil VK. Longitudinal modeling of the relationship between age and maximal heart rate. *Medicine & Science in Sports & Exercise* 39: 822–829, 2007.
 33. Gibala MJ and McGee SL. Metabolic adaptations to short-term high-intensity interval training a little pain for a lot of gain? *Exercise and Sport Science Review* 36: 58–63, 2008.
 34. Gibala MJ, Little JP, MacDonald J, and Hawley JA. Physiological adaptations to low-volume, high-intensity interval training in health and disease. *Journal of Physiology* 590(5): 1077–1084, 2012.
 35. Golding LA. *YMCA Fitness Testing and Assessment Manual*. Champaign, IL: Human Kinetics, 2000.
 36. Goodman LS and Gilman A. *The Pharmacological Basis of Therapeutics*. New York, NY: Macmillan, 1975.
 37. Guiraud T, Nigam A, Gremeaux V, Meyer P, Juneau M, and Bosquet L. High-intensity interval training in cardiac rehabilitation. *Sports Medicine* 42: 587–605, 2012.
 38. Gutmann M. Perceived exertion-heart rate relationship during exercise testing and training in cardiac patients. *Journal of Cardiac Rehabilitation* 1: 52–59, 1981.
 39. Hage P. Perceived exertion: one measure of exercise intensity. *Physician and Sportsmedicine* 9: 136–143, 1981.
 40. Haskell WL. Dose-response issues from a biological perspective. In *Physical Activity, Fitness, and Health*, edited by Bouchard C, Shephard RJ, and Stevens T. Champaign, IL: Human Kinetics, 1994, pp. 1030–1039.
 41. Haskell WL. Physical activity and health: need to define the required stimulus. *The American Journal of Cardiology* 55: 4D–9D, 1985.
 42. Haskell WL, Lee IM, Pate RR, Powell KE, Blair SN, Franklin BA, et al. Physical activity and public health: updated recommendation for adults from the American College of Sports Medicine and the American Heart Association. *Medicine & Science in Sports & Exercise* 39: 1423–1434, 2007.
 43. Haskell WL, Montoye HJ, and Orenstein D. Physical activity and exercise to achieve health-related physical fitness components. *Public Health Report* 100: 202–212, 1985.
 44. Hellerstein H. Principles of exercise prescription for normals and cardiac subjects. In *Exercise Training in Coronary Heart Disease*, edited by Naughton JP, and Hellerstein HK. New York, NY: Academic Press, 1973, pp. 129–167.
 45. Hellerstein HK and Ader R. Relationship between

- percent maximal oxygen uptake (% max $\dot{V}O_2$) and percent maximal heart rate (% MHR) in normals and cardiacs (ASHD). *Circulation* 43–44 (Suppl II): 76, 1971.
46. Hellerstein HK and Franklin BA. Exercise testing and prescription. In *Rehabilitation of the Coronary Patient*, edited by Wenger NK, and Hellerstein HK. New York, NY: Wiley, 1984, pp. 197–284.
47. Hermansen L, and Saltin B. Oxygen uptake during maximal treadmill and bicycle exercise. *Journal of Applied Physiology* 26: 31–37, 1969.
48. Hetzler RK, Seip RL, Boutcher SH, Pierce E, Snead D, and Weltman A. Effect of exercise modality on ratings of perceived exertion at various lactate concentrations. *Medicine & Science in Sports & Exercise* 23: 88–92, 1991.
49. Howley ET. Type of activity: resistance, aerobic and leisure versus occupational physical activity. *Medicine & Science in Sports & Exercise* 33: S364–369; discussion S419–320, 2001.
50. Howley ET and Thompson DL. *Fitness Professional's Handbook*. 7th ed. Champaign, IL: Human Kinetics, 2017.
51. Humburg H, Baars H, Schroder J, Reer R, and Braumann KM. 1-set vs. 3-set resistance training: a crossover study. *Journal of Strength and Conditioning Research/ National Strength & Conditioning Association* 21: 578–582, 2007.
52. Jennings GL, Deakin G, Korner P, Meredith I, Kingwell B, and Nelson L. What is the dose-response relationship between exercise training and blood pressure? *Annals of Medicine* 23: 313–318, 1991.
53. Kaminsky LA, Arena R, Beckie TM, Brubaker PH, Church TS, Forman DE, et al. The importance of cardiorespiratory fitness in the United States: the need for a national registry. A policy statement from the American Heart Association. *Circulation* 127: 652–662, 2013.
54. Kaminsky LA, Arena R, and Myers J. Reference standards for cardiorespiratory fitness measured with cardiopulmonary exercise testing: data from the Fitness Registry and the Importance of Exercise National Database. *Mayo Clinic Proceedings* 90: 1515–1523, 2015.
55. Karvonen J and Vuorimaa T. Heart rate and exercise intensity during sports activities: practical application. *Sports Medicine* 5: 303–311, 1988.
56. Karvonen MJ, Kentala E, and Mustala O. The effects of training on heart rate; a longitudinal study. *Annales Medicinæ Experimentalis et Biologiæ Fenniae* 35: 307–315, 1957.
57. Kasaniemi YA, Danforth JE, Jensen MD, Kopelman PG, Lefebvre P, and Reeder BA. Dose-response issues concerning physical activity and health: an evidenced-based symposium. *Medicine & Science in Sports & Exercise* 33 (Suppl): S351–358, 2001.
58. Kessler HS, Sisson SB, and Short KR. The Potential for high-intensity interval training to reduce cardiometabolic disease risk. *Sports Medicine* 42: 489–509, 2012.
59. King A, Powell K, and Kraus W. The US physical activity guidelines advisory committee report - introduction. *Medicine & Science in Sports & Exercise* 51:1203–1205, 2019.
60. Kodama S, Saito K, Tanaka S, Maki M, Yachi Y, Asumi M, et al. Cardiorespiratory fitness as a quantitative predictor of all-cause mortality and cardiovascular events in healthy men and women. *Journal of the American Medical Association* 301: 2024–2035, 2009.
61. Kohl HW, Gibbons LW, Gordon NF, and Blair SN. An empirical evaluation of the ACSM guidelines for exercise testing. *Medicine & Science in Sports & Exercise* 22: 533–539, 1990.
62. Koshy A, Sajeev J, Nerlekar N, Brown A, Rajakariar K, Zuriek M, et al. Smart watches for heart rate assessment in atrial arrhythmias. *International Journal of Cardiology* 266: 124–127, 2018.
63. Kraus W, Janz K, Powell K, Campbell W, Jakicic J, Troiano R, et al. Daily step counts for measuring physical activity and its relationship to health. *Medicine and Science in Sports and Exercise* 51: 1206–1212, 2019.
64. Lee IM, Hsieh CC, and Paffenbarger RS, Jr. Exercise intensity and longevity in men. The Harvard alumni health study. *JAMA* 273: 1179–1184, 1995.
65. Lee IM, Shiroma E, Kamada M, Bassett D, Matthews C, and Buring J. Association of step volume and intensity with all-cause mortality in older women. *JAMA Internal Medicine* in press 2019.
66. Little JP, Safdar A, Wilkin GP, Tarnopolsky MA, and Gibala MJ. A practical model of low-volume high-intensity interval training induces mitochondrial biogenesis in human skeletal muscle: potential mechanisms. *Journal of Physiology* 588(6): 1011–1022, 2010.
67. Londeree BR and Ames SA. Trend analysis of the % $\dot{V}O_2$ max–HR regression. *Medicine and Science in Sports* 8: 123–125, 1976.
68. McConnell TR. Practical considerations in the testing of $\dot{V}O_2$ max in runners. *Sports Medicine* 5: 57–68, 1988.
69. McArdle WD, Katch FI, and Pechar GS. Comparison of continuous and discontinuous treadmill and bicycle tests for max $\dot{V}O_2$. *Medicine and Science in Sports* 5: 156–160, 1973.
70. Milanovic, Z, Sporis G, and Weston M. Effectiveness of high-intensity interval training (HIT) and continuous endurance training for $\dot{V}O_2$ max improvements: a systematic review and meta-analysis of controlled trials. *Sports Medicine*. 45: 1469–1481, 2015.
71. Morgans L. Heart rate responses during singles and doubles tennis competition. *Physician and Sportsmedicine* 15: 67–74, 1987.
72. Myers J, Prakash M, Froelicher V, Do D, Partington S, and Atwood JE. Exercise capacity and mortality among men referred for exercise testing. *New England Journal of Medicine* 346: 793–801, 2002.
73. O'Donovan G, Owen A, Bird SR, Kearney EM, Nevill AM, Jones DW, et al. Changes in cardiorespiratory

- fitness and coronary heart disease risk factors following 24 wk of moderate- or high-intensity exercise of equal energy cost. *Journal of Applied Physiology* 98: 1619–1625, 2005.
74. Paffenbarger RS and Hale WE. Work activity and coronary heart mortality. *New England Journal of Medicine* 292: 545–550, 1975.
75. Paffenbarger RS, Hyde RT, and Wing AL. Physical activity and physical fitness as determinants of health and longevity. In *Exercise, Fitness and Health*, edited by Bouchard C, Shephard RJ, Stevens T, Sutton JR, and McPherson BD. Champaign, IL: Human Kinetics, 1990, pp. 33–48.
76. Paffenbarger RS, Jr., Hyde RT, Wing AL, and Hsieh CC. Physical activity, all-cause mortality, and longevity of college alumni. *New England Journal of Medicine* 314: 605–613, 1986.
77. Paffenbarger RS, Jr., Hyde RT, Wing AL, Lee IM, Jung DL, and Kampert JB. The association of changes in physical-activity level and other lifestyle characteristics with mortality among men. *New England Journal of Medicine* 328: 538–545, 1993.
78. Pate RR, Pratt M, Blair SN, Haskell WL, Macera CA, Bouchard C, et al. Physical activity and public health: a recommendation from the Centers for Disease Control and Prevention and the American College of Sports Medicine. *JAMA* 273: 402–407, 1995.
79. Peterson MD, Rhea MR, and Alvar BA. Maximizing strength development in athletes: a meta-analysis to determine the dose-response relationship. *Journal of Strength and Conditioning Research/National Strength & Conditioning Association* 18: 377–382, 2004.
80. Pollock ML. How much exercise is enough? *Physician and Sportsmedicine* 6: 50–64, 1978.
81. Pollock ML, Broida J, Kendrick Z, Miller HS, Jr., Janeway R, and Linnerud AC. Effects of training two days per week at different intensities on middleaged men. *Medicine and Science in Sports* 4: 192–197, 1972.
82. Pollock ML, Dimmick J, Miller HS, Jr., Kendrick Z, and Linnerud AC. Effects of mode of training on cardiovascular function and body composition of adult men. *Medicine and Science in Sports* 7: 139–145, 1975.
83. Pollock ML, Gettman LR, Milesis CA, Bah MD, Durstine L, and Johnson RB. Effects of frequency and duration of training on attrition and incidence of injury. *Medicine and Science in Sports* 9: 31–36, 1977.
84. Pollock ML, and Wilmore JH. *Exercise in Health and Disease*. Philadelphia, IL: W. B. Saunders, 1990.
85. Porcari JP, Ebbeling CB, Ward A, Freedson PS, and Rippe JM. Walking for exercise testing and training. *Sports Medicine* 8: 189–200, 1989.
86. Powell KE, Paluch AE, and Blair SN. Physical activity for health: What kind? How much? How intense? On top of what? *Annual Review of Public Health* 2011 32: 349–365.
87. Powell KE, Thompson PD, Caspersen CJ, and Kendrick JS. Physical activity and the incidence of coronary heart disease. *Annual Review of Public Health* 8: 253–287, 1987.
88. Proper KI, van den Heuvel SG, De Vroome EM, Hildebrandt VH, and Van der Beek AJ. Doseresponse relation between physical activity and sick leave. *British Journal of Sports Medicine* 40: 173–178, 2006.
89. Quindry J, Franklin B, Chapman M, Humphrey R, and Mathis S. Benefits and risks of high-intensity interval training in patients with coronary artery disease. *American Journal of Cardiology* 123: 1370–1377, 2019.
90. Rhea MR, Alvar BA, and Burkett LN. Single versus multiple sets for strength: a meta-analysis to address the controversy. *Research Quarterly for Exercise and Sport* 73: 485–488, 2002.
91. Rhea MR, Alvar BA, Burkett LN, and Ball SD. A meta-analysis to determine the dose response for strength development. *Medicine & Science in Sports & Exercise* 35: 456–464, 2003.
92. Robertson RJ, Goss FL, Auble TE, Cassinelli DA, Spina RJ, Glickman EL, et al. Cross-modal exercise prescription at absolute and relative oxygen uptake using perceived exertion. *Medicine & Science in Sports & Exercise* 22: 653–659, 1990.
93. Ronnestad BR, Egeland W, Kvamme NH, Refsnes PE, Kadi F, and Raastad T. Dissimilar effects of one- and three-set strength training on strength and muscle mass gains in upper and lower body in untrained subjects. *Journal of Strength and Conditioning Research/National Strength & Conditioning Association* 21: 157–163, 2007.
94. Rowell LB. Human cardiovascular adjustments to exercise and thermal stress. *Physiological Reviews* 54: 75–159, 1974.
95. Sallis R, Matuszak J, Baggish A, Franklin B, Chodzko-Zajko W, Fletcher B et al. Call to action on making physical activity assessment and prescription a standard of care. *Current Sport Medicine Reports* 15: 207–215, 2016.
96. Saltin B, and Gollnick PD. Skeletal muscle adaptability: significance for metabolism and performance. In *Handbook of Physiology—Section 10: Skeletal Muscle*, edited by Peachey LD, Adrian RH, and Geiger SR. Baltimore, MD: Lippincott Williams & Wilkins, 1983.
97. Sawka MN, Foley ME, Pimental NA, Toner MM, and Pandolf KB. Determination of maximal aerobic power during upper-body exercise. *Journal of Applied Physiology* 54: 113–117, 1983.
98. Seip RL, Snead D, Pierce EF, Stein P, and Weltman A. Perceptual responses and blood lactate concentration: effect of training state. *Medicine & Science in Sports & Exercise* 23: 80–87, 1991.
99. Siscovick DS, Weiss NS, Fletcher RH, and Lasky T. The incidence of primary cardiac arrest during vigorous exercise. *New England Journal of Medicine*

311: 874–877, 1984.

100. Siscovick DS, Weiss NS, Fletcher RH, Schoenbach VJ, and Wagner EH. Habitual vigorous exercise and primary cardiac arrest: effect of other risk factors on the relationship. *Journal of Chronic Diseases* 37: 625–631, 1984.

101. Stahl S, An H, Dinkel D, Noble, J, and Lee J. How accurate are wrist-based heart rate monitors during walking and running activities? *Sports Exercise and Medicine* 2: 1–8, 2016.

102. Stromme SB, Ingjer F, and Meen HD. Assessment of maximal aerobic power in specifically trained athletes. *Journal of Applied Physiology* 42: 833–837, 1977.

103. Swain DP and Franklin BA. Comparison of cardioprotective benefits of vigorous versus moderate intensity aerobic exercise. *American Journal of Cardiology* 97: 141–147, 2006.

104. Swain DP and Franklin BA. $\dot{V}O_2$ reserve and the minimal intensity for improving cardiorespiratory fitness. *Medicine & Science in Sports & Exercise* 34: 152–157, 2002.

105. Tanaka H, Monahan KD, and Seals DR. Age-predicted maximal heart rate revisited. *Journal of the American College of Cardiology* 37: 153–156, 2001.

106. Tudor-Locke C, Aguiar E, Han H, Ducharme S, Schuna J, Barrera T, et al. Walking cadence (steps/min) and intensity in 21–40 year olds: CADENCE adults. *International Journal of Behavior Nutrition and Physical Activity* 16: 1–11, 2019.

107. U.S. Department of Health and Human Services. 2018 Physical activity guidelines for Americans. 2nd edition. https://health.gov/paguidelines/second-edition/pdf/Physical_Activity_Guidelines_2nd_edition.pdf

108. U.S. Department of Health and Human Services. Physical Activity Guidelines Advisory Committee Report 2018. https://health.gov/paguidelines/second-edition/report/pdf/PAG_Advisory_Committee_Report.pdf

109. U.S. Department of Health and Human Services. Healthy People 2000: National Health Promotion and Disease Prevention Objectives. U.S. Government Printing Office, 1990.

110. Wenger HA and Bell GJ. The interactions of intensity, frequency and duration of exercise training in altering cardiorespiratory fitness. *Sports Medicine* 3: 346–356, 1986.

111. Wolfe BL, LeMura LM, and Cole PJ. Quantitative analysis of single- vs. multiple-set programs in resistance training. *Journal of Strength and Conditioning Research/National Strength & Conditioning Association* 18: 35–47, 2004.

Chapter 17

1. Ali Z, Norsk P, and Ulrik CS. Mechanisms and management of exercise-induced asthma in elite athletes. *Journal of Asthma* 49: 480–486, 2012.

2. American College of Obstetricians and Gynecologists. Physical activity and exercise during

pregnancy and the postpartum period. (Committee Opinion No. 650). *Obstetrics & Gynecology* 126: e135–42, 2015.

3. American College of Sports Medicine. Exercise and hypertension. *Medicine & Science in Sports & Exercise* 25: i–x, 2004.

4. American College of Sports Medicine. Exercise and physical activity for the older adult. *Medicine & Science in Sports & Exercise* 41: 1510–1530, 2009.

5. American College of Sports Medicine. Guidelines for Exercise Testing and Prescription. Baltimore, MD: Lippincott Williams & Wilkins, 2018.

6. American College of Sports Medicine. Physical activity and bone health. *Medicine & Science in Sports & Exercise* 36: 1985–1996, 2004.

7. American College of Sports Medicine and American Diabetes Association. Exercise and type 2 diabetes. *Medicine & Science in Sports & Exercise* 42: 2282–2303, 2010.

8. American Diabetes Association. Classification and diagnosis of diabetes. *Diabetes Care* 39: S13–S22, 2016.

9. American Diabetes Association. Nutrition recommendations and interventions for diabetes. *Diabetes Care* 30 (Suppl 1): S48–65, 2007.

10. American Diabetes Association. Physical activity/exercise and diabetes. *Diabetes Care* 27: S58–62, 2004.

11. American Diabetes Association. Prevention or delay of type 2 diabetes. *Diabetes Care* 27: S47–54, 2004.

12. Anderson SD, Caillaud C, and Brannan JD. Beta2-agonists and exercise-induced asthma. *Clinical Reviews in Allergy & Immunology* 31: 163–180, 2006.

13. Aragam KG, Dai D, Neely ML, Bhatt DL, Roe MT, Rumsfeld JS, et al. Gaps in referral to cardiac rehabilitation of patients undergoing percutaneous coronary intervention in the United States. *Journal of the American College of Cardiology* 65: 2079–2088, 2015.

14. Babcock MA, Paterson DH, and Cunningham DA. Effects of aerobic endurance training on gas exchange kinetics of older men. *Medicine & Science in Sports & Exercise* 26: 447–452, 1994.

15. Bailey RL, Dodd KW, Goldman JA, Gahche JJ, Dwyer JT, Moshfegh AJ, et al. Estimation of total usual calcium and vitamin D intakes in the United States. *Journal of Nutrition* 140: 817–822, 2010.

16. Baker MK, Atlantis E, and Fiatarone Singh MA. Multi-modal exercise programs for older adults. *Age and Ageing* 36: 375–381, 2007.

17. Bassett DR and Zweifler AJ. Risk factors and risk factor management. In: *Clinical Ischemic Syndromes*, edited by Zelenock GB, D'Alecy LG, Fantone III JC, Shlafer M, and Stanley JC. St. Louis, MO: C. V. Mosby, 1990, pp. 15–46.

18. Bloomfield SA and Smith SS. Osteoporosis. In: *ACSM's Exercise Management for Persons with Chronic Diseases and Disabilities*. Champaign, IL: Human Kinetics, 2003, pp. 222–229.

19. Booker R. Chronic obstructive pulmonary disease:

- non-pharmacological approaches. *British Journal of Nursing* 14: 14–18, 2005.
20. Boyden T, Rubenfire M, and Franklin B. Will increasing referral to cardiac rehabilitation improve participation? *Preventive Cardiology* 13: 192–201, 2010.
 21. Briscoe VJ, Tate DB, and Davis SN. Type 1 diabetes: exercise and hypoglycemia. *Applied Physiology, Nutrition, and Metabolism = Physiologie Appliquee, Nutrition et Metabolisme* 32: 576–582, 2007.
 22. Brown TM, Hernandez AF, Bittner V, Cannon CP, Ellrodt G, Liang L, et al. Predictors of cardiac rehabilitation referral in coronary artery disease patients: finding from the American Heart Association Get With the Guidelines Program. *Journal of the American College of Cardiology* 54: 515–521, 2009.
 23. Brusasco V and Crimi E. Allergy and sports: exercise-induced asthma. *International Journal of Sports Medicine* 15 (Suppl 3): S184–186, 1994.
 24. Butts JF, Belfer MH, and Gebke KB. Exercise for patients with COPD: an integral yet underutilized intervention. *Physician and Sportsmedicine* 41: 49–57, 2013.
 25. Carlin BW. Diagnostic procedures in patients with pulmonary diseases. In: *ACSM's Resource Manual for Guidelines for Exercise Testing and Prescription*, 7th ed. Baltimore, MD: Lippincott Williams & Wilkins, 2014, pp. 397–412.
 26. Carlsen KH. Sports in extreme conditions: the impact of exercise in cold temperatures on asthma and bronchial hyper-responsiveness in athletes. *British Journal of Sports Medicine* 46: 796–799, 2012.
 27. Carnethon MR, Evans NS, Church TS, Lewis CE, Schreiner PJ, Jacobs DR, et al. Joint associations of physical activity and aerobic fitness on the development of incident hypertension: coronary artery disease risk development in young adults. *Hypertension* 56: 49–55, 2010.
 28. Carpenter MW. Physical activity, fitness, and health of the pregnant mother and fetus. In *Physical Activity, Fitness, and Health*, edited by Bouchard C, Shephard RJ, and Stephens T. Champaign, IL: Human Kinetics, 1994, pp. 967–979.
 29. Castle J, and Rodbard D. How well do continuous monitoring glucose systems perform during exercise? *Diabetes Technology & Therapeutics* 21: 305–309, 2019.
 30. Celli B, Tetzlaff K, Criner G, Polkey M, Sciruba F, Casaburi R, et al. The 6-minute walk distance test as a chronic obstructive pulmonary disease stratification tool. *American Journal of Respiratory and Critical Care Medicine* 194: 1483–1493, 2016.
 31. Chobanian AV, Bakris GL, Black HR, Cushman WC, Green LA, Izzo JL, Jr., et al. Seventh report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure. *Hypertension* 42: 1206–1252, 2003.
 32. Church T. Exercise in obesity, metabolic syndrome, and diabetes. *Progress in Cardiovascular Disease* 53: 412–418, 2011.
 33. Clapp JF III and Capeless E. The $\dot{V}O_{2\max}$ of recreational athletes before and after pregnancy. *Medicine & Science in Sports & Exercise* 23: 1128–1133, 1991.
 34. Clark CJ. Asthma. In: *ACSM's Exercise Management for Persons with Chronic Diseases and Disabilities*. Champaign, IL: Human Kinetics, 2003, pp. 105–110.
 35. Coe DP and Fiatarone Singh M. Exercise prescription in special populations: women, pregnancy, children, and older adults. In: *ACSM's Resource Manual for Guidelines for Exercise Testing and Prescription*, edited by Swain DP. Baltimore, MD: Wolters Kluwer/Lippincott Williams & Wilkins, 2014, pp. 565–595.
 36. Colberg SR. Exercise Prescription for patients with diabetes. In: *ACSM's Resource Manual for Guidelines for Exercise Testing and Prescription*, edited by Swain DP. Baltimore, MD: Lippincott Williams & Wilkins, 2014, pp. 661–681.
 37. Cooper CB. Airflow obstruction and exercise. *Respiratory Medicine* 103: 325–334, 2009.
 38. Cooper CB and Storer TW. Exercise prescription in patients with pulmonary disease. In: *ACSM's Resource Manual for Guidelines for Exercise Testing and Prescription*, edited by Ehrman JK. Baltimore, MD: Lippincott Williams & Wilkins, 2010, pp. 575–599.
 39. Cristopoliski F, Barela JA, Leite N, Fowler NE, and Rodacki ALF. Stretching exercise programs improve gait in the elderly. *Gerontology* 55: 614–620, 2009.
 40. Cypcar D and Lemanske RF, Jr. Asthma and exercise. *Clinics in Chest Medicine* 15: 351–368, 1994.
 41. Damm P, Breitowicz B, and Hegaard H. Exercise, pregnancy, and insulin sensitivity—what is new? *Applied Physiology, Nutrition, and Metabolism = Physiologie Appliquee, Nutrition et Metabolisme* 32: 537–540, 2007.
 42. Davies GA, Wolfe LA, Mottola MF, and MacKinnon C. Joint SOGC/CSEP clinical practice guideline: exercise in pregnancy and the postpartum period. *Canadian Journal of Applied Physiology = Revue Canadienne de Physiologie Appliquee* 28: 330–341, 2003.
 43. Del Giacco S, Firinu D, Bjermer L, and Carlsen K. Exercise and asthma: an overview. *European Clinical Respiratory Journal* 2: 1–13, 2015.
 44. Dickinson JW, Whyte GP, McConnell AK, and Harries MG. Screening elite winter athletes for exercise induced asthma: a comparison of three challenge methods. *British Journal of Sports Medicine* 40: 179–182; discussion 179–182, 2006.
 45. Doll JA, Hellkamp A, Ho MP, Kontos MC, Whooley MA, Peterson ED, and Wang TY. Participation in cardiac rehabilitation programs among older patients after acute myocardial infarction. *JAMA Internal Medicine* 175: 1700–1701, 2015.
 46. Durstine JL, Moore GE, Painter PL, Macko R, Gordon BT, and Kraus WE. Chronic conditions strongly associated with physical inactivity. In: *ACSM's Exercise Management for Persons with Chronic Diseases and Disabilities*, edited by Moore GE, Durstine JL, and Painter PL. Champaign IL: Human Kinetics, 2016, 71–94.
 47. Ehrman JK and Schairer JR. Diagnostic procedures for cardiovascular disease. In: *ACSM's Resource Manual*

- for Guidelines for Exercise Testing and Prescription. Baltimore, MD: Lippincott Williams & Wilkins, 2006, pp. 277–288.
48. Entin PL and Munhall KM. Recommendations regarding exercise during pregnancy made by private/small group practice obstetricians in the USA. *Journal of Sports Science and Medicine* 5: 449–458, 2006.
49. Eskurza I, Donato A, Moreau K, Seals D, and Tanaka H. Changes in maximal aerobic capacity with age in endurance-trained women: 7-yr follow-up. *Journal of Applied Physiology* 92: 2303–2308, 2002.
50. Everson KR and Pompeii LA. Obstetrician practice patterns and recommendations for physical activity during pregnancy. *Journal of Women's Health* 19: 1733–1740, 2010.
51. Fitch K and Morton A. Specificity of exercise in exercise-induced asthma. *British Medical Journal* 4: 577–581, 1971.
52. Fitzgerald MD, Tanaka H, Tran ZV, and Seals DR. Age-related declines in maximal aerobic capacity in regularly exercising vs. sedentary women: a meta-analysis. *Journal of Applied Physiology* 83: 160–165, 1997.
53. Franklin BA. Myocardial infarction. In: *ACSM's Exercise Management for Persons with Chronic Disease and Disabilities*, edited by Durstine JL, Moore GE, Painter PL, and Roberts SO. Champaign, IL: Human Kinetics, 2009, p. 49–57.
54. Franklin BA. Revascularization: CABGS abd PTCA or PCI. In: *ACSM's Exercise Management for Persons with Chronic Disease and Disabilities*, edited by Durstine JL, Moore GE, Painter PL, and Roberts SO. Champaign, IL: 2009.
55. Global Initiative for Chronic Obstructive Lung Disease (GOLD). Global Strategy for Diagnosis, Management, and Prevention of COPD. www.goldcopd.org, 2013.
56. Gordon NF. Hypertension. In: *ACSM's Exercise Management for Persons with Chronic Disease and Disabilities*, edited by Durstine JL, Moore GE, Painter PL, and Roberts SO. Champaign, IL: Human Kinetics, 2009, pp. 107–113.
57. Hagberg JM. Exercise, fitness, and hypertension. In: *Exercise, Fitness, and Health*, edited by Bouchard C, Shephard RJ, Stephens T, Sutton JR, and McPherson BD. Champaign, IL: Human Kinetics, 1990, pp. 455–466.
58. Hamm LF, Wenger NK, Arena R, Forman DE, Lavie CJ, Miller TD, et al. Cardiac rehabilitation and cardiovascular disability: role of assessment and improving functional capacity. *Journal of Cardiopulmonary Rehabilitation and Prevention* 33: 1–11, 2013.
59. Haverkamp HC, Dempsey JA, Pegelow DF, Miller JD, Romer LM, Santana M, et al. Treatment of airway inflammation improves exercise pulmonary gas exchange and performance in asthmatic subjects. *The Journal of Allergy and Clinical Immunology* 120: 39–47, 2007.
60. Jackson AS, Sui X, Hebert JR, Church TS, and Blair SN. Role of lifestyle and aging on the longitudinal change in cardiorespiratory fitness. *Archives of Internal Medicine* 169: 1781–1787, 2009.
61. Jolly K, Taylor RS, Lip GY, and Stevens A. Homebased cardiac rehabilitation compared with centrebased rehabilitation and usual care: a systematic review and meta-analysis. *International Journal of Cardiology* 111: 343–351, 2006.
62. Jones A and Bowen M. Screening for childhood asthma using an exercise test. *British Journal of General Practice* 44: 127–131, 1994.
63. Kannel WB. Bishop lecture. Contribution of the Framingham Study to preventive cardiology. *Journal of the American College of Cardiology* 15: 206–211, 1990.
64. Kaplan NM and Victor R. *Clinical Hypertension*. 11th edition. Baltimore, MD: Lippincott Williams & Wilkins, 2014.
65. Kasch FW, Boyer JL, Van Camp SP, Verity LS, and Wallace JP. The effect of physical activity and inactivity on aerobic power in older men (a longitudinal study). *Physician and Sportsmedicine* 18: 73–83, 1990.
66. Katz RM. Coping with exercise-induced asthma in sports. *Physician and Sportsmedicine* 15: 100–112, 1987.
67. Kemmer FW and Berger M. Exercise and diabetes mellitus: physical activity as a part of daily life and its role in the treatment of diabetic patients. *International Journal of Sports Medicine* 4: 77–88, 1983.
68. Kennedy A, Nirantharakumar K, Chimen M, Pang TT, Hemming K, Andrews RC, et al. Does exercise improve glycaemic control in type 1 diabetes? A systematic review and meta-analysis. *PLOS ONE* 8: e58861, 2013.
69. Keteyian SJ. Exercise prescription for patients with cardiovascular disease. In: *ACSM's Resource Manual for Guidelines for Exercise Testing and Prescription*, 7th ed. Baltimore, MD: Lippincott Williams & Wilkins, 2014, pp. 619–634.
70. Kindermann W. Do inhaled β_2 -agonists have an ergogenic potential in non-asthmatic competitive athletes? *Sports Medicine* 37: 95–102, 2007.
71. Knowler WC, Barrett-Connor E, Fowler SE, Hamman RF, Lachin JM, Walker EA, et al. Reduction in the incidence of type 2 diabetes with lifestyle intervention or Metformin. *New England Journal of Medicine* 346: 393–403, 2002.
72. Koliaki C and Katsilambros N. Dietary sodium, potassium, and alcohol: key players in the pathophysiology, prevention, and treatment of dietary hypertension. *Nutrition Reviews* 71: 402–411, 2013.
73. Lampman RM and Campaign BN. Exercise testing in patients with diabetes. In: *ACSM's Resource Manual for Guidelines for Exercise Testing and Prescription*. Baltimore, MD: Lippincott Williams & Wilkins, 2006, pp. 245–254.
74. Lotgering FK, van Doorn MB, Struijk PC, Pool J, and Wallenburg HC. Maximal aerobic exercise in pregnant women: heart rate, O₂ consumption, CO₂ production, and ventilation. *Journal of Applied Physiology* 70: 1016–1023, 1991.
75. Lucas SR and Platts-Mills TA. Physical activity and exercise in asthma: relevance to etiology and treatment. *Journal of Allergy and Clinical Immunology* 115: 928–934, 2005.

76. Mahler DA. Exercise-induced asthma. *Medicine & Science in Sports & Exercise* 25: 554–561, 1993.
77. McCullough PA. Diagnostic procedures for cardiovascular disease. In: *ACSM's Resource Manual for Guidelines for Exercise Testing and Prescription*, edited by Ehrman JK. Baltimore, MD: Lippincott Williams & Wilkins, 2010, pp. 360–374.
78. McKenzie DC, McLuckie SL, and Stirling DR. The protective effects of continuous and interval exercise in athletes with exercise-induced asthma. *Medicine & Science in Sports & Exercise* 26: 951–956, 1994.
79. Mickleborough TD, Head SK, and Lindley MR. Exercise-induced asthma: nutritional management. *Current Sports Medicine Reports* 10: 197–202, 2011.
80. Moore SC, Lee I-M, Weiderpass E, et al. Association of leisure-time physical activity with risk of 26 types of cancer in 1.44 million adults. *JAMA Internal Medicine* 176: 816–825, 2016.
81. Morton AR and Fitch KD. *Exercise Testing and Exercise Prescription for Special Cases*. Baltimore, MD: Lippincott Williams & Wilkins, 2005.
82. Mudd LM, Owe KM, Mottola MF, and Pivarnik JM. Health benefits of physical activity during pregnancy: an international perspective. *Medicine & Science in Sports & Exercise* 45:268–277, 2013.
83. Nelson ME, Rejeski WJ, Blair SN, Duncan PW, Judge JO, King AC, et al. Physical activity and public health in older adults: recommendations from the American College of Sports Medicine and the American Heart Association. *Medicine & Science in Sports & Exercise* 39: 1435–1445, 2007.
84. Nichols DL and Essery EV. Osteoporosis and exercise. In: *ACSM's Resource Manual for Guidelines for Exercise Testing and Prescription*. Baltimore, MD: Lippincott Williams & Wilkins, 2006, pp. 489–499.
85. Painter PL and Moore GE. Art of clinical exercise programming. In: *ACSM's Exercise Management for Persons with Chronic Diseases and Disabilities*, edited by Moore GE, Durstine JL, and Painter PL. Champaign IL: Human Kinetics, 2016, pp. 33–46.
86. Paterson DH, Jones GR, and Rice CL. Ageing and physical activity: evidence to develop exercise recommendations for older adults. *Canadian Journal of Public Health* 98 (Suppl 2): S69–108, 2007.
87. Pavy B, Iliou MC, Meurin P, Tabet JY, and Corone S. Safety of exercise training for cardiac patients: results of the French registry of complications during cardiac rehabilitation. *Archives of Internal Medicine* 166: 2329–2334, 2006.
88. Peno-Green LA and Cooper CB. Treatment and rehabilitation of pulmonary diseases. In: *ACSM's Resource Manual for Guidelines for Exercise Testing and Prescription*. Baltimore, MD: Lippincott Williams & Wilkins, 2006, pp. 452–469.
89. Peterson MD, Rhea MR, Sen A, and Gordon PM. Resistance exercise for muscular strength in older adults: a meta analysis. *Ageing Research Reviews* 9: 226–237, 2010.
90. Petit MA, Hughes JM, and Warpeha JM. Exercise prescription for people with osteoporosis. In: *ACSM's Resource Manual for Guidelines for Exercise Testing and Prescription*, edited by Ehrman JK. Baltimore, MD: Lippincott Williams & Wilkins, 2010, pp. 635–650.
91. Pierson WE, Covert DS, Koenig JQ, Namekata T, and Kim YS. Implications of air pollution effects on athletic performance. *Medicine & Science in Sports & Exercise* 18: 322–327, 1986.
92. Pluim BM, de Hon O, Staal JB, Limpens J, Kuipers H, Overbeek SE, et al. Beta 2-agonists and physical performance: a systematic review and meta-analysis of randomized control trials. *Sports Medicine* 41: 39–57, 2011.
93. Quaglietti S and Froelicher VF. Physical activity and cardiac rehabilitation for patients with coronary heart disease. In: *Physical Activity, Fitness, and Health*, edited by Bouchar C, Shephard RJ, and Stephens T. Champaign, IL: Human Kinetics, 1994, pp. 591–608.
94. Quindry J, Franklin B, Chapman M, Humphrey R, and Mathis S. Benefits and risks of high intensity interval training in patients with coronary artery disease. *American Journal of Cardiology* 123: 1370–1377, 2019.
95. Randolph C. An update on exercise-induced bronchoconstriction with and without asthma. *Current Allergy and Asthma Reports* 9: 433–438, 2009.
96. Richter EA and Galbo H. Diabetes, insulin and exercise. *Sports Medicine* 3: 275–288, 1986.
97. Robling AG, Burr DB, and Turner CH. Partitioning a daily mechanical stimulus into discrete loading bouts improves the osteogenic response to loading. *Journal of Bone and Mineral Research* 15: 1596–1602, 2000.
98. Rogers MA. Acute effects of exercise on glucose tolerance in non-insulin-dependent diabetes. *Medicine & Science in Sports & Exercise* 21: 362–368, 1989.
99. Romer L. Pathophysiology and treatment of pulmonary disease. In: *ACSM's Resource Manual for Guidelines for Exercise Testing and Prescription*, 7th ed. Baltimore, MD: Lippincott Williams & Wilkins, 2014, pp. 121–137.
100. Rubin CT and Lanyon LE. Regulation of bone mass by mechanical strain magnitude. *Calcified Tissue International* 37: 411–417, 1985.
101. Schairer JS and Keteyian SJ. Exercise testing in patients with cardiovascular disease. In: *ACSM's Resource Manual for Guidelines for Exercise Testing and Prescription*. Baltimore, MD: Lippincott Williams & Wilkins, 2006, pp. 439–451.
102. Schmitz K. Cancer. In: *ACSM's Exercise Management for Persons with Chronic Diseases and Disabilities*, edited by Moore GE, Durstine JL, and Painter PL. Champaign IL: Human Kinetics, 2016, pp. 115–123.
103. Scibora L. Exercise prescription for patients with osteoporosis. In: *ACSM's Resource Manual for Guidelines for Exercise Testing and Prescription*, 7th ed. Baltimore, MD: Lippincott Williams & Wilkins, 2014, pp. 699–712.
104. Skinner JS. Hypertension. In: *Exercise Testing and Exercise Prescription for Special Cases*, edited by Skinner JS. Baltimore, MD: Lippincott Williams & Wilkins,

2005, pp. 305–312.

105. Spina RJ. Cardiovascular adaptations to endurance exercise training in older men and women. *Exercise and Sport Sciences Reviews* 27: 317–332, 1999.

106. Storer TW. Exercise prescription for patients with pulmonary disease. In: *ACSM's Resource Manual for Guidelines for Exercise Testing and Prescription*, 7th ed. Baltimore, MD: Lippincott Williams & Wilkins, 2014, pp. 635–660.

107. Storms WW. Review of exercise-induced asthma. *Medicine & Science in Sports & Exercise* 35: 1464–1470, 2003.

108. Thompson PD, Franklin BA, Balady GJ, Blair SN, Corrado D, Estes NA, III, et al. Exercise and acute cardiovascular events placing the risks into perspective: a scientific statement from the American Heart Association Council on Nutrition, Physical Activity, and Metabolism and the Council on Clinical Cardiology. *Circulation* 115: 2358–2368, 2007.

109. Tommaso CL, Lesch M, and Sonnenblick EH. Alterations in cardiac function in coronary heart disease, myocardial infarction, and coronary bypass surgery. In *Rehabilitation of the Coronary Patient*, edited by Wenger NK, and Hellerstein HK. New York, NY: Wiley, 1984, pp. 41–66.

110. Trappe S, Hayes E, Galpin A, Kaminsky L, Jemiolo

B, Fink W, et al. New records in aerobic power among octogenarian lifelong endurance athletes. *Journal of Applied Physiology* 114: 3–10, 2013.

111. Tucker W, Beaudry R, Liang Y, Clark A, Tomczak C, Nelson M, et al. Meta-analysis of exercise training on left ventricular ejection fraction in heart failure with reduced ejection fraction: a 10-year update. *Progress in Cardiovascular Disease* 62: 163–171, 2019.

112. Tuomilehto J. Nonpharmacological therapy and exercise in the prevention of type 2 diabetes. *Diabetes Care* 32: S189–S193, 2009.

113. Umpierre D, Ribeiro PAB, Schaan BD, and Ribeiro JP. Volume of supervised exercise training impacts glycaemic control in patients with type 2 diabetes: a systematic review with meta-regression analysis. *Diabetologia*. 56: 242–251, 2013.

114. U.S. Department of Health and Human Services. *Physical Activity Guidelines for Americans*. 2nd edition. Washington, DC: U.S. Department of Health and Human Services, 2018.

115. Verity LS. Exercise testing in patients with cardiovascular disease. In: *Diabetes and Exercise*. Baltimore, MD: Lippincott Williams & Wilkins, 2006, pp. 470–479.

116. Voy RO. The U.S. Olympic Committee experience with exercise-induced bronchospasm, 1984. *Medicine and Science in Sports and Exercise* 18: 328–330, 1986.

117. Wallace JP. Exercise in hypertension: a clinical review. *Sports Medicine* 33: 585–598, 2003.

118. Weiler JM, Bonini S, Coifman R, Craig T, Delgado

L, Capao-Filipe M, et al. American Academy of Allergy, Asthma & Immunology Work Group report: exercise-induced asthma. *Journal of Allergy and*

Clinical Immunology 119: 1349–1358, 2007.

119. Widmaier EP, Raff H, and Strang KT. *Vander's Human Physiology*. 13th ed. New York, NY: McGraw-Hill, 2014.

120. Wolfe LA. Pregnancy. In: *Exercise Testing and Exercise Prescription for Special Cases*, edited by Skinner JS. Baltimore, MD: Lippincott Williams & Wilkins, 2005, pp. 377–391.

121. Wolfe LA, Brenner IK, and Mottola MF. Maternal exercise, fetal well-being and pregnancy outcome. *Exercise and Sport Sciences Reviews* 22: 145–194, 1994.

122. Wolfe LA, Ohtake PJ, Mottola MF, and McGrath MJ. Physiological interactions between pregnancy and aerobic exercise. *Exercise and Sport Sciences Reviews* 17: 295–351, 1989.

123. World Hypertension League. Physical exercise in the management of hypertension: a consensus statement by the World Hypertension League. *Journal of Hypertension* 9: 283–287, 1991.

Chapter 18

1. Aghajanian, P, Hall S, Wongworawat M, and Mohan S. The roles and mechanisms of actions of vitamin C in bone: new developments. *Journal of Bone and Mineral Research* 30: 1945–1955, 2015.

2. Armstrong LE. Hydration assessment techniques. *Nutrition Reviews* 63: S40–S54, 2005.

3. Behnke AR, Welham WC, and Feen BG. The specific gravity of healthy men: body weight volume as an index of obesity. *Journal of the American Medical Association* 118: 495–498, 1942.

4. Bergeron N, Siri-Tarino P, Bray GA, and Krauss R (Eds.). *Nutrition and cardiometabolic health*. Boca Raton, FL: CRC Press, 2018.

5. Bray GA. Effect of caloric restriction on energy expenditure in obese patients. *Lancet* 2: 397–398, 1969.

6. Bray GA, Nielsen SJ, and Popkin BM. Consumption of high fructose corn syrup in beverages may play a role in the epidemic of obesity. *American Journal of Clinical Nutrition* 79: 537–543, 2004.

7. Bryner RW, Ullrich IH, Sauers J, Donley D, Hornsby G, Kolar M, et al. Effects of resistance vs. aerobic training combined with an 800 calorie liquid diet on lean body mass and resting metabolic rate. *Journal of the American College of Nutrition* 18: 115–121, 1999.

8. Byrd-Bredbenner C, Moe G, Berning J, and Kelley D. *Wardlaw's Perspectives in Nutrition*. New York, NY: McGraw-Hill, 2016.

9. Chaston TB and O'Brien PE. Changes in fat-free mass during significant weight loss: a systematic review. *International Journal of Obesity* 31: 743–750, 2007.

10. Curioni CC and Lourenco PM. Long-term weight loss after diet and exercise. *International Journal of Obesity* 29: 1168–1174, 2005.

11. Dansinger ML, Gleason JA, Griffith JL, Selker HP, and Schaefer EJ. Comparison of the Atkins, Ornish, Weight Watchers, and Zone diets for weight loss and heart disease risk reduction: a randomized trial. *JAMA* 293: 43–53, 2005.

12. Dewal RS and Stanford KI. Effects of exercise on brown and beige adipocytes. *Biochimica et Biophysica Acta* 1864: 71–78, 2019.
13. Fan JY, Song YQ, Wang YY, Hui RT, Zhang WL. Dietary glycemic index, glycemic load, and risk coronary heart disease, stroke, and stroke mortality: a systematic review with meta-analysis. *PLOS ONE* 7: e52182, 2012.
14. Flegal KM, Kit BK, Orprana H, and Graubard BI. Association of all-cause mortality with overweight and obesity using standard body mass index categories: a systematic review and meta-analysis. *JAMA* 309: 71–78, 2013.
15. Fox, SI. *Human Physiology*. McGraw-Hill, New York. 15e, 2019.
16. Franz MJ, VanWormer JJ, Crain AL, Boucher JL, Histon T, Caplan W, et al. Weight-loss outcomes: a systematic review and meta-analysis of weight-loss clinical trials with a minimum 1-year follow-up. *Journal of the American Dietetic Association* 107: 1755–1767, 2007.
17. Goldman RF and Buskirk ER. Body volume measurement by underwater weighing: description of a method. In: *Techniques for Measuring Body Composition*, edited by Brozek J, and Henschel A. National Research Council, Washington, DC, 1961.
18. Ha V, Jayalath VH, Cozma AI, Mirrahimi A, de Souza RJ, and Sievenpiper, JL. Fructose-containing sugars, blood pressure and cardiometabolic risk: a critical review. *Current Hypertension Reports* 15: 281–297, 2013.
19. Hall KD, Heymsfield SB, Kemnitz JW, Klein S, Schoeller DA, Speakman JR. Energy balance and its components: implications for body weight regulation. *American Journal of Clinical Nutrition* 95: 989–994, 2012.
20. Hall KD, Bemis T, Brychta R, Chen KY, Courville A, Crayner EJ, et al. Calorie for calorie, dietary fat restriction results in more fat loss than carbohydrate restriction in people with obesity. *Cell Metabolism* 22: 427–436, 2015.
21. Hall KD, Sacks G, Chandramohan D, Chow CC, Wang YC, Gortmaker SL, et al. Quantification of the effect of energy imbalance on body weight. *Lancet* 378: 826–837, 2011.
22. Hall KD. What is the required energy deficit per unit weight loss. *International Journal of Obesity* 32: 573–576, 2008.
23. Hall KD. A review of the carbohydrate-insulin model of obesity. *European Journal of Clinical Nutrition*. doi:10.1038/ejcn.2016.269. 2017.
24. Hensen LC, Poole DC, Donahoe CP, and Heber D. Effect of exercise training on resting energy expenditure during caloric restriction. *American Journal of Clinical Nutrition* 46: 893–899, 1987.
25. Reference deleted
26. Jackson AS and Pollock ML. Practical assessment of body composition. *Physician and Sportsmedicine* 13: 76–90, 1985.
27. Keys A. *The Biology of Human Starvation*. Minneapolis, MN: The University of Minnesota Press, 1950.
28. Kris-Etherton P, Daniels SR, Eckel RH, Engler M, Howard BV, Krauss RM, et al. Summary of the scientific conference on dietary fatty acids and cardiovascular health: conference summary from the Nutrition Committee of the American Heart Association. *Circulation* 103: 1034–1039, 2001.
29. Kristo AS, Matthan NR, and Lichtenstein AH. Effects of diets differing in glycemic index and glycemic load on cardiovascular risk factors: review of randomized controlled feeding trials. *Nutrients* 5: 1071–1080, 2013.
30. Kwok K, Lam K, and Xu A. Heterogeneity of white adipose tissue: molecular basis and clinical implications. *Experimental and Molecular Medicine* 48: e215; doi:10.1038/emm.2016.5, 2016.
31. Reference deleted
32. Lohman, T and Milliken L. *ACSM's Body Composition Assessment*. Champaign, IL: Human Kinetics, 2020.
33. Lohman TG. Applicability of body composition techniques and constants for children and youths. In: *Exercise and Sport Sciences Reviews*, edited by Pandolf KB. New York, NY: Macmillan, 1986, pp. 325–357.
34. Mifflin MD, St Jeor S, Hill LA and Scott B. A new predictive equation for resting energy expenditure in healthy individuals. *American Journal of Clinical Nutrition* 51: 241–247, 1990.
35. Millard-Stafford ML, Collins MA, Evans EM, Snow TK, Cureton KJ, and Roskopf LB. Use of air displacement plethysmography for estimating body fat in a four-component model. *Medicine and Science in Sports and Exercise* 33: 1311–1317, 2001.
36. Mokdad AH, Marks J, Stroup DF, et al. Actual causes of death in the United States, 2000. *Journal of American Medical Association* 291: 1238–1245, 2004.
37. Ratamess N. Body composition status and assessment. In: *ACSM's Resource Manual for Guidelines for Exercise Testing and Prescription*, edited by Swain DP. Baltimore, MD: Lippincott Williams & Wilkins, 2014, pp. 287–308.
38. Romero-Corral A, Somers V, Sierra-Johnson J, Thomas R, Collazo-Clavell M, Korinek J, et al. Accuracy of body mass index in diagnosing obesity in the general adults population. *International Journal of Obesity* 32: 959–966, 2008.
39. Sacks FM, Bray GA, Carey VJ, Smith SR, Ryan DH, Anton SD, et al. Comparison of weight-loss diets with different compositions of fat, protein and carbohydrates. *New England Journal of Medicine* 360: 859–873, 2009.
40. Schwingshackl L and Hoffmann G. Long-term effects of low glycemic index/load vs. high glycemic index/load diets on parameters of obesity and obesity-associated risks: a systematic review and meta-analysis. *Nutrition Metabolism and Cardiovascular Diseases* 23: 699–706, 2013.
41. Shai I, Schwarzfuchs D, Henkin Y, Shahar DR, Witkow S, Greenberg I, et al. Weight loss with a low carbohydrate, Mediterranean, or low-fat diet. *New England Journal of Medicine* 359: 229–241, 2008.
42. Sheard NF, Clark NG, Brand-Miller JC, Franz MJ, Pi-Sunyer FX, Mayer-Davis E, et al. Dietary

carbohydrate (amount and type) in the prevention and management of diabetes: a statement by the American Diabetes Association. *Diabetes Care* 27: 2266–2271, 2004.

43. Siri WE. Body composition from fluid spaces and density: analysis of methods. In: *Techniques for Measuring Body Composition*, edited by Brozek J, and Henschel A. Washington, D.C.: National Academy of Sciences, 1961, pp. 223–244.

44. Slawson, DL, Fitzgerald N, and Morgan K. Position of the academy of nutrition and dietetics: the role of nutrition in health promotion and chronic disease prevention. *Journal of Academy of Nutrition and Dietetics* 113: 972–979, 2013.

45. Smith AM, Collene AL and Spees CK. *Contemporary Nutrition—A Functional Approach*. New York, NY: McGraw-Hill, 2019.

46. Stephenson TJ and Schiff WJ. *Human Nutrition: Science for Healthy Living*. New York, NY: McGraw-Hill, 2019.

47. Thom G and Lean M. Is there an optimal diet for weight management and metabolic health? *Gastroenterology* 152: 1739–1751, 2017.

48. Thompson DL. Body composition. In: *Fitness Professional's Handbook*, edited by Howley ET and Thompson, DL. Champaign, IL: Human Kinetics, 2017.

Chapter 19

1. Allen DG, Lamb GD, and Westerblad H. Skeletal muscle fatigue: cellular mechanisms. *Physiological Reviews* 88: 287–332, 2008.

2. Allen DG and Westerblad H. Role of phosphate and calcium stores in muscle fatigue. *Journal of Physiology* 536: 657–665, 2001.

3. Allen DG, Westerblad H, Lee JA, and Lannergren J. Role of excitation-contraction coupling in muscle fatigue. *Sports Medicine* 13: 116–126, 1992.

4. Amann M, Sidhu SK, Weavil JC, Mangum TS, and Venturelli M. Autonomic responses to exercise: group III/IV muscle afferents. *Autonomic Neuroscience: Basic and Clinical* 188: 19–23, 2015.

5. Appell HJ, Soares JM, and Duarte JA. Exercise, muscle damage and fatigue. *Sports Medicine* 13: 108–115, 1992.

6. Asmussen E and Mazin B. A central nervous component in local muscular fatigue. *European Journal of Applied Physiology and Occupational Physiology* 38: 9–15, 1978.

7. Asmussen E and Mazin B. Recuperation after muscular fatigue by “diverting activities.” *European Journal of Applied Physiology and Occupational Physiology* 38: 1–7, 1978.

8. Åstrand P-O and Rodahl K. *Textbook of Work Physiology*. 2nd edition, New York: McGraw-Hill, 1977.

9. Banister EW and Cameron BJ. Exercise-induced hyperammonemia: peripheral and central effects. *International Journal of Sports Medicine* 11 (Suppl 2): S129–142, 1990.

10. Bassett DR Jr. and Howley ET. Limiting factors for maximum oxygen uptake and determinants of endurance

performance. *Medicine & Science in Sports & Exercise* 32: 70–84, 2000.

11. Bassett DR Jr. and Howley ET. Maximal oxygen uptake: “classical” versus “contemporary” viewpoints. *Medicine & Science in Sports & Exercise* 29: 591–603, 1997.

12. Bigland-Ritchie B. EMG and fatigue of human voluntary and stimulated contractions. In *Human Muscle Fatigue: Physiological Mechanisms*. London: Pitman Medical, 1981, pp. 130–156.

13. Bundle MW and Weyand PG. Sprint exercise performance: does metabolic power matter? *Exercise and Sports Sciences Reviews* 40: 174–182, 2012.

14. Coirault C, Guellich A, Barbry T, Samuel JL, Riou B, and Lecarpentier Y. Oxidative stress of myosin contributes to skeletal muscle dysfunction in rats with chronic heart failure. *American Journal of Physiology* 292: H1009–1017, 2007.

15. Coombes JS, Powers SK, Rowell B, Hamilton KL, Dodd SL, Shanely RA, et al. Effects of vitamin E and alpha-lipoic acid on skeletal muscle contractile properties. *Journal of Applied Physiology* 90: 1424–1430, 2001.

16. Coyle EF. Integration of the physiological factors determining endurance performance ability. *Exercise and Sport Sciences Reviews* 23: 25–63, 1995.

17. Davis JM, Alderson NL, and Welsh RS. Serotonin and central nervous system fatigue: nutritional considerations. *American Journal of Clinical Nutrition* 72: 573S–578S, 2000.

18. Davis JM and Bailey SP. Possible mechanisms of central nervous system fatigue during exercise. *Medicine & Science in Sports & Exercise* 29: 45–57, 1997.

19. Duke AM and Steele DS. Mechanisms of reduced SR Ca²⁺ release induced by inorganic phosphate in rat skeletal muscle fibers. *American Journal of Physiology—Cell Physiology* 281: C418–429, 2001.

20. Edwards R. Human muscle function and fatigue. In *Human Muscle Fatigue: Physiological Mechanisms*. London: Pitman Medical, 1981.

21. Eichner ER. Top marathon performance: interesting debate and troubling trends. *Current Sports Medicine Reports* 14: 2–3, 2015.

22. Enoka RM, Baudry S, Rudroff T, Farina D, Klass M, and Duchateau J. Unraveling the neurophysiology of muscle fatigue. *Journal of Electromyography and Kinesiology* 21: 208–219, 2011.

23. Enoka R, and Duchateau J. Translating fatigue to human performance. *Medicine and Science in Sports and Exercise* 48: 2228–2238, 2016.

24. Fitts RH. Cellular mechanisms of muscle fatigue. *Physiological Reviews* 74: 49–94, 1994.

25. Fitts RH. The cross-bridge cycle and skeletal muscle fatigue. *Journal of Applied Physiology* 104: 551–558, 2008.

26. Fitts RH, Riley DR, and Widrick JJ. Functional and structural adaptations of skeletal muscle to microgravity. *Journal of Experimental Biology* 204: 3201–3208, 2001.

27. Fitts RH. The muscular system: fatigue processes. In *ACSM's Advanced Exercise Physiology*, edited by Tipton

- CM, Sawka MN, Tate CA, and Terjung RL. Baltimore, MD: Lippincott Williams & Wilkins, 2006, pp. 178–196.
28. Fuchs F, Reddy Y, and Briggs FN. The interaction of cations with the calcium-binding site of troponin. *Biochimica et Biophysica Acta* 221: 407–409, 1970.
29. Gibson H and Edwards RH. Muscular exercise and fatigue. *Sports Medicine* 2: 120–132, 1985.
30. Green HJ. Membrane excitability, weakness, and fatigue. *Canadian Journal of Applied Physiology 5 Revue Canadienne de Physiologie Appliquee* 29: 291–307, 2004.
31. Halliwell B and Gutteridge J. *Free Radicals in Biology and Medicine*. Oxford: Oxford Press, 2007.
32. Helge JW, Rehrer NJ, Pilegaard H, Manning P, Lucas SJE, Gerrard DF, et al. Increased fat oxidation and regulation of metabolic genes with ultraendurance exercise. *Acta Physiologica* 191: 77–86, 2007.
33. Ikai M and Steinhaus AH. Some factors modifying the expression of human strength. *Journal of Applied Physiology* 16: 157–163, 1961.
34. Ikai M and Yabe K. Training effect of muscular endurance by means by voluntary and electrical stimulation. *Internationale Zeitschrift Fur Angewandte Physiologie, Einschliesslich Arbeitsphysiologie* 28: 55–60, 1969.
35. Ingham SA, Whyte GP, Pedlar C, Bailey DM, Dunman N, and Nevill AM. Determinants of 800-m and 1500-m running performance using allometric models. *Medicine & Science in Sports & Exercise* 40: 345–350, 2008.
36. Kayser B. Exercise starts and ends in the brain. *European Journal of Applied Physiology* 90: 411–419, 2003.
37. Knechtle B and Kohler G. Running performance, not anthropometric factors, is associated with race success in a triple iron triathlon. *British Journal of Sports Medicine* 43: 437–441, 2009.
38. Lambert EV, St Clair Gibson A, and Noakes TD. Complex systems model of fatigue: integrative homeostatic control of peripheral physiological systems during exercise in humans. *British Journal of Sports Medicine* 39: 52–62, 2005.
39. Larsen HB and Sheel AW. The Kenyan runners. *Scandinavian Journal of Medicine and Science in Sports*. 25 (Suppl 4): 110–118, 2015.
40. Matuszczak Y, Farid M, Jones J, Lansdowne S, Smith MA, Taylor AA, et al. Effects of N-acetylcysteine on glutathione oxidation and fatigue during handgrip exercise. *Muscle & Nerve* 32: 633–638, 2005.
41. McKenna MJ, Medved I, Goodman CA, Brown MJ, Bjorksten AR, Murphy KT, et al. N-acetylcysteine attenuates the decline in muscle Na⁺, K⁺-pump activity and delays fatigue during prolonged exercise in humans. *Journal of Physiology* 576: 279–288, 2006.
42. McLaughlin JE, Howley ET, Bassett DR, Jr., Thompson DL, and Fitzhugh EC. Test of the classic model for predicting endurance running performance. *Medicine & Science in Sports & Exercise* 42: 991–997, 2010.
43. McLester JR, Jr. Muscle contraction and fatigue. The role of adenosine 5'-diphosphate and inorganic phosphate. *Sports Medicine* 23: 287–305, 1997.
44. Medved I, Brown MJ, Bjorksten AR, and McKenna MJ. Effects of intravenous N-acetylcysteine infusion on time to fatigue and potassium regulation during prolonged cycling exercise. *Journal of Applied Physiology* 96: 211–217, 2004.
45. Medved I, Brown MJ, Bjorksten AR, Murphy KT, Petersen AC, Sostaric S, et al. N-acetylcysteine enhances muscle cysteine and glutathione availability and attenuates fatigue during prolonged exercise in endurance-trained individuals. *Journal of Applied Physiology* 97: 1477–1485, 2004.
46. Meeusen R and Watson P. Amino acids and the brain: do they play a role in “central fatigue”? *International Journal of Sport Nutrition and Exercise Metabolism* 17: S37–S46, 2007.
47. Meeusen R, Watson P, Hasegawa H, Roelands B, and Piacentini MF. Central fatigue: the serotonin hypothesis and beyond. *Sports Medicine* 36: 881–909, 2006.
48. Merry TL and Ristow M. Do antioxidant supplements interfere with skeletal muscle adaptations to exercise training? *Journal of Physiology*. 594: 5135–5147, 2016.
49. Merton PA. Voluntary strength and fatigue. *Journal of Physiology* 123: 553–564, 1954.
50. Millet GY, Banfi JC, Kerhervé H, Morin JB, Vincent L, Estrade C, et al. Physiological and biological factors associated with a 24 h treadmill ultra-marathon performance. *Scandinavian Journal of Medicine & Science in Sports* 21: 54–61, 2011.
51. Millet GY, Morin JB, Degache F, Edouard P, Feasson L, Verney J, et al. Running from Paris to Neijing: biomechanical and physiological consequences. *European Journal of Applied Physiology* 107: 731–738, 2009.
52. Millet GY, Tomazin K, Verges S, Vincent C, Bonnefoy R, Boisson RC, et al. Neuromuscular consequences of an extreme mountain ultra-marathon. *PLOS ONE* 6: No. e17059, 2011.
53. Nielsen B and Nybo L. Cerebral changes during exercise in the heat. *Sports Medicine* 33: 1–11, 2003.
54. National Heart, Lung, and Blood Institute workshop summary. Respiratory muscle fatigue: report of the respiratory muscle fatigue workshop group. *American Journal of Respiratory Disease* 142: 474–480, 1990.
55. Noakes TD and St Clair Gibson A. Logical limitations to the “catastrophe” models of fatigue during exercise in humans. *British Journal of Sports Medicine* 38: 648–649, 2004.
56. Noakes TD, St Clair Gibson A, and Lambert EV. From catastrophe to complexity: a novel model of integrative central neural regulation of effort and fatigue during exercise in humans. *British Journal of Sports Medicine* 38: 511–514, 2004.
57. Noakes TD, St Clair Gibson A, and Lambert EV. From catastrophe to complexity: a novel model of integrative central neural regulation of effort and fatigue during exercise in humans: summary and conclusions. *British Journal of Sports Medicine* 39: 120–124,

- 2005.
58. Page AJ, Reid SA, Speedy DB, Mulligan GP, and Thompson J. Exercise-associated hyponatremia, renal function, and nonsteroidal antiinflammatory drug use in an ultraendurance mountain run. *Clinical Journal of Sport Medicine* 17: 43–48, 2007.
59. Place N, Yamada T, Bruton JD, and Westerblad H. Muscle fatigue: from observations in humans to underlying mechanisms studies in intact single muscle fibers. *European Journal of Applied Physiology* 110: 1–15, 2010.
60. Powers S and Jackson M. Exercise-induced oxidative stress: cellular mechanisms and impact on skeletal muscle force production. *Physiological Reviews* 88: 1243–1276, 2008.
61. Powers SK, DeRuisseau KC, Quindry J, and Hamilton KL. Dietary antioxidants and exercise. *Journal of Sports Sciences* 22: 81–94, 2004.
62. Reid M. Redox modulation of skeletal muscle contraction: what we know and what we don't. *Journal of Applied Physiology* 90: 724–731, 2001.
63. Reid M. Free radicals and muscle fatigue: of ROS, canaries, and the IOC. *Free Radical Biology and Medicine* 44: 169–179, 2008.
64. Roberts D and Smith DJ. Biochemical aspects of peripheral muscle fatigue. A review. *Sports Medicine* 7: 125–138, 1989.
65. Sahlin K. Metabolic factors in fatigue. *Sports Medicine* 13: 99–107, 1992.
66. Sale DG. Influence of exercise and training on motor unit activation. In *Exercise and Sport Sciences Reviews*, edited by Pandolf K. New York, NY: Macmillan, 1987, vol. 15, pp. 95–151.
67. Sejersted OM and Sjogaard G. Dynamics and consequences of potassium shifts in skeletal muscle and heart during exercise. *Physiological Reviews* 80: 1411–1481, 2000.
68. Smith MA and Reid MB. Redox modulation of contractile function in respiratory and limb skeletal muscle. *Respiratory Physiology & Neurobiology* 151: 229–241, 2006.
69. St Clair Gibson A and Noakes TD. Evidence for complex system integration and dynamic neural regulation of skeletal muscle recruitment during exercise in humans. *British Journal of Sports Medicine* 38: 797–806, 2004.
70. Stewart RD, Duhamel TA, Foley KP, Ouyang J, Smith IC, and Green HJ. Protection of muscle membrane excitability during prolonged cycle exercise with glucose supplementation. *Journal of Applied Physiology* 103: 331–339, 2007.
71. Struder HK and Weicker H. Physiology and pathophysiology of the serotonergic system and its implications on mental and physical performance. Part I. *International Journal of Sports Medicine* 22: 467–481, 2001.
72. Struder HK and Weicker H. Physiology and pathophysiology of the serotonergic system and its implications on mental and physical performance. Part II. *International Journal of Sports Medicine* 22: 482–497, 2001.
73. Tanaka H and Seals DR. Dynamic exercise performance in Masters athletes: insight into the effects of primary human aging on physiological functional capacity. *Journal of Applied Physiology* 95: 2152–2162, 2003.
74. Tod D, Iredale F, and Gill N. 'Psyching-up' and muscular force production. *Sports Medicine* 33: 47–58, 2003.
75. Trivedi B and Danforth WH. Effect of pH on the kinetics of frog muscle phosphofructokinase. *Journal of Biological Chemistry* 241: 4110–4112, 1966.
76. Tupling AR. The sarcoplasmic reticulum in muscle fatigue and disease: role of the sarco(endo)plasmic reticulum Ca²⁺-ATPase. *Canadian Journal of Applied Physiology* 5 *Revue Canadienne de Physiologie Appliquée* 29: 308–329, 2004.
77. Vandenboom R. The myofibrillar complex and fatigue: a review. *Canadian Journal of Applied Physiology* 5 *Revue Canadienne de Physiologie Appliquée* 29: 330–356, 2004.
78. Weir JP, Beck TW, Cramer JT, and Housh TJ. Is fatigue all in your head? A critical review of the central governor model. *British Journal of Sports Medicine* 40: 573–586; discussion 586, 2006.
79. Westerblad H, Lee JA, Lannergren J, and Allen DG. Cellular mechanisms of fatigue in skeletal muscle. *American Journal of Physiology* 261: C195–209, 1991.
80. Wilber RL and Pitsiladis YP. Kenyan and Ethiopian distance runners: what makes them so good? *International Journal of Sports Physiology and Performance* 7: 92–102, 2012.

Chapter 20

1. ACSM. American College of Sports Medicine position stand. Progression models in resistance training for healthy adults. *Medicine & Science in Sports & Exercise* 41: 687–708, 2009.
2. Alway SE, Sale DG, and MacDougall JD. Twitch contractile adaptations are not dependent on the intensity of isometric exercise in the human triceps surae. *European Journal of Applied Physiology and Occupational Physiology* 60: 346–352, 1990.
3. Alway SE, Stray-Gundersen J, Grumbt WH, and Gonyea WJ. Muscle cross-sectional area and torque in resistance-trained subjects. *European Journal of Applied Physiology and Occupational Physiology* 60: 86–90, 1990.
4. Amir O, Amir R, Yamin C, Attias E, Eynon N, Sagiv M, et al. The ACE deletion allele is associated with Israeli elite endurance athletes. *Experimental Physiology* 92: 881–886, 2007.
5. Andersen J. Stretching before and after exercise: effect on muscle soreness and injury risk. *Journal of Athletic Training* 40: 218–220, 2005.
6. Armstrong RB. Mechanisms of exercise-induced delayed onset muscular soreness: a brief review. *Medicine & Science in Sports & Exercise* 16: 529–538, 1984.
7. Astorino TA, Allen RP, Roberson DW, Jurancich M, Lewis R, McCarthy K, et al. Adaptations to highintensity training are independent of gender. *European Journal of Applied Physiology* 111: 1279–1286, 2010.
8. Åstrand P and Rodahl K. *Textbook of Work Physiology*.

Champaign, IL: Human Kinetics, 2003.

9. Barandun U, Knechtle B, Knechtle P, Klipstein A, Rust C, Rosemann T, et al. Running speed during training and percent body fat predict race time in recreational male marathoners. *Journal of Sports Medicine* 3: 51–58, 2012.
10. Barker AR and Armstrong N. Exercise testing elite young athletes. *Medicine and Sport Science* 56: 106–125, 2011.
11. Berger R. *Applied Exercise Physiology*. Philadelphia, PA: Lea & Febiger, 1982.
12. Bouchard C, Sarzynski MA, Rice TK, Kraus WE, Church TS, Sung YJ, et al. Genomic predictors of maximal oxygen uptake response to standardized exercise training programs. *Journal of Applied Physiology* 110:1160–1170, 2011.
13. Bowers R and Fox E. *Sports Physiology*. New York, NY: McGraw-Hill, 1992.
14. Burke E. Physiological similar effects of similar training programs in males and females. *Research Quarterly* 48: 510–517, 1977.
15. Calvo M, Rodas G, Vallejo M, Estruch A, Arcas A, Javierre C, et al. Heritability of explosive power and anaerobic capacity in humans. *European Journal of Applied Physiology* 86: 218–225, 2002.
16. Carvalho AC, Junior LC, Costa LO, and Lopes AD. The association between runners' lower limb alignment with running-related injuries: a systematic review. *British Journal of Sports Medicine* 45: 339, 2011.
17. Chapman R, Karlsen T, Resaland G, Ge R, Harber M, Witkowski S, et al. Defining the dose of altitude training: how high to live for optimal sea level performance. *Journal of Applied Physiology* 116: 595–603, 2014.
18. Clarkson PM, Byrnes WC, McCormick KM, Turcotte LP, and White JS. Muscle soreness and serum creatine kinase activity following isometric, eccentric, and concentric exercise. *International Journal of Sports Medicine* 7: 152–155, 1986.
19. Clarkson PM, Nosaka K, and Braun B. Muscle function after exercise-induced muscle damage and rapid adaptation. *Medicine & Science in Sports & Exercise* 24: 512–520, 1992.
20. Clarkson PM and Sayers SP. Etiology of exercise-induced muscle damage. *Canadian Journal of Applied Physiology* 24: 234–248, 1999.
21. Close GL, Ashton T, McArdle A, and Maclaren DP. The emerging role of free radicals in delayed onset muscle soreness and contraction-induced muscle injury. *Comparative Biochemistry and Physiology Part A: Molecular & Integrative Physiology* 142: 257–266, 2005.
22. Costill D. Effects of reduced training on muscular power in swimmers. *Physician and Sports Medicine* 13: 94–101, 1985.
23. Costill DL, Coyle EF, Fink WF, Lesmes GR, and Witzmann FA. Adaptations in skeletal muscle following strength training. *Journal of Applied Physiology* 46: 96–99, 1979.
24. Costill DL, Thomas R, Robergs RA, Pascoe D, Lambert C, Barr S, et al. Adaptations to swimming training: influence of training volume. *Medicine & Science in Sports & Exercise* 23: 371–377, 1991.
25. Coyle, EF. Improved muscular efficiency displayed as Tour de France champion matures. *Journal of Applied Physiology* 98: 2191–2196, 2007.
26. Coyle EF, Martin WH, III, Sinacore DR, Joyner MJ, Hagberg JM, and Holloszy JO. Time course of loss of adaptations after stopping prolonged intense endurance training. *Journal of Applied Physiology* 57: 1857–1864, 1984.
27. Davies CT, and Knibbs AV. The training stimulus: the effects of intensity, duration and frequency of effort on maximum aerobic power output. *Internationale Zeitschrift für angewandte Physiologie, einschliesslich Arbeitsphysiologie* 29: 299–305, 1971.
28. Deschenes M. Short review: motor coding and motor unit recruitment pattern. *Journal of Applied Sport Science Research* 3: 33–39, 1989.
29. Dudley GA, Abraham WM, and Terjung RL. Influence of exercise intensity and duration on biochemical adaptations in skeletal muscle. *Journal of Applied Physiology* 53: 844–850, 1982.
30. Dudley GA, and Djamil R. Incompatibility of endurance- and strength-training modes of exercise. *Journal of Applied Physiology* 59: 1446–1451, 1985.
31. Fox E, and Mathews D. *Interval Training: Conditioning for Sports and General Fitness*. Philadelphia, PA: W. B. Saunders, 1974.
32. Engel F, Holmberg H, and Sperlich B. Is there evidence that runners can benefit from wearing compression clothing? *Sports Medicine* DOI.1007/s40279-016-0546-5, 2016.
33. Fox EL, Bartels RL, Billings CE, O'Brien R, Bason R, and Mathews DK. Frequency and duration of interval training programs and changes in aerobic power. *Journal of Applied Physiology* 38: 481–484, 1975.
34. Fox EL, Robinson S, and Wiegman DL. Metabolic energy sources during continuous and interval running. *Journal of Applied Physiology* 27: 174–178, 1969.
35. Fradkin AJ, Zazryn TR, and Smoliga JM. Effects of warming-up on physical performance: a systematic review with meta-analysis. *Journal of Strength and Conditioning Research* 24: 140–148, 2010.
36. Friden J, and Lieber RL. Structural and mechanical basis of exercise-induced muscle injury. *Medicine & Science in Sports & Exercise* 24: 521–530, 1992.
37. Friden J, Sjöström M, and Ekblom B. Myofibrillar damage following intense eccentric exercise in man. *International Journal of Sports Medicine* 4: 170–176, 1983.
38. Fry RW, Grove JR, Morton AR, Zeroni PM, Gaudieri S, and Keast D. Psychological and immunological correlates of acute overtraining. *British Journal of Sports Medicine* 28: 241–246, 1994.
39. Galvao D, and Taaffe D. Single- vs. multiple-set resistance training: recent developments in the controversy.

- Journal of Strength and Conditioning Research 18: 660–667, 2004.
40. Gaskill SE, Ruby BC, Walker AJ, Sanchez OA, Serfass RC, and Leon AS. Validity and reliability of combining three methods to determine ventilatory threshold. *Medicine & Science in Sports & Exercise* 33: 1841–1848, 2001.
41. Gibala MJ, MacDougall JD, and Sale DG. The effects of tapering on strength performance in trained athletes. *International Journal of Sports Medicine* 15: 492–497, 1994.
42. Gibala M, Little J, MacDonald M, and Hawley J. Physiological adaptations to low-volume, high intensity interval training in health and disease. *Journal of Physiology* 590(5): 1077–1084, 2012.
43. Gissel H, and Clausen T. Excitation-induced Ca²⁺ influx and skeletal muscle cell damage. *Acta Physiologica Scandinavica* 171: 327–334, 2001.
44. Gonyea W, Ericson GC, and Bonde-Petersen F. Skeletal muscle fiber splitting induced by weightlifting exercise in cats. *Acta Physiologica Scandinavica* 99: 105–109, 1977.
45. Gonyea WJ. Role of exercise in inducing increases in skeletal muscle fiber number. *Journal of Applied Physiology* 48: 421–426, 1980.
46. Gonyea WJ, Sale DG, Gonyea FB, and Mikesky A. Exercise induced increases in muscle fiber number. *European Journal of Applied Physiology and Occupational Physiology* 55: 137–141, 1986.
47. Grant S, McMillan K, Newell J, Wood L, Keatley S, Simpson D, et al. Reproducibility of the blood lactate threshold, 4 mmol.l(-1) marker, heart rate and ratings of perceived exertion during incremental treadmill exercise in humans. *European Journal of Applied Physiology* 87: 159–166, 2002.
48. Hansen A, Fischer C, Plomgaard P, Andersen J, Saltin B, and Pedersen B. Skeletal muscle adaptation: training twice every second day vs. training once daily. *Journal of Applied Physiology* 98: 93–99, 2005.
49. Hart L. Effect of stretching on sport injury risk: a review. *Clinical Journal of Sport Medicine* 15: 113, 2005.
50. Hawley JA. Molecular responses to strength and endurance training: are they incompatible? *Applied Physiology Nutrition and Metabolism* 34: 355–361, 2009.
51. Hawley J, Burke L, Phillips S, and Spriet L. Nutritional modulation of training-induced skeletal muscle adaptations. *Journal of Applied Physiology* 110: 834–845, 2011.
52. Hickson RC. Interference of strength development by simultaneously training for strength and endurance. *European Journal of Applied Physiology and Occupational Physiology* 45: 255–263, 1980.
53. Hickson RC, Bomze HA, and Holloszy JO. Linear increase in aerobic power induced by a strenuous program of endurance exercise. *Journal of Applied Physiology* 42: 372–376, 1977.
54. Hill DW. The critical power concept: a review. *Sports Medicine* 16: 237–254, 1993.
55. Hill J, Howatson G, van Someren K, Leeder J, and Pedlar C. Compression garments and recovery from exercise-induced muscle damage: a meta-analysis. *British Journal of Sports Medicine* 48:1340–1346, 2014.
56. Holloway JB, and Baechle TR. Strength training for female athletes: a review of selected aspects. *Sports Medicine* 9: 216–228, 1990.
57. Hooper SL, Mackinnon LT, Howard A, Gordon RD, and Bachmann AW. Markers for monitoring overtraining and recovery. *Medicine & Science in Sports & Exercise* 27: 106–112, 1995.
58. Houmard JA, Costill DL, Mitchell JB, Park SH, Hickner RC, and Roemmich JN. Reduced training maintains performance in distance runners. *International Journal of Sports Medicine* 11: 46–52, 1990.
59. Housh TJ, Cramer JT, Bull AJ, Johnson GO, and Housh DJ. The effect of mathematical modeling on critical velocity. *European Journal of Applied Physiology* 84: 469–475, 2001.
60. Iaia FM, and Bangsbo J. Speed endurance training is a powerful stimulus for physiological adaptations and performance improvements of athletes. *Scandinavian Journal of Medicine and Sciences in Sports* 20 (Suppl 2): 11–23, 2010.
61. Jones A and Vanhatalo A. The ‘critical power’ concept: applications to sports performance with a focus on intermittent high-intensity exercise. *Sports Medicine* 47: 65–78, 2017.
62. Jones, AM. The physiology of the world record holder for the women’s marathon. *International Journal of Sports Science & Coaching*. 1:101–115, 2006.
63. Junior LC, Carvalho AC, Costa LO, and Lopes AD. The prevalence of musculoskeletal injuries in runners: a systematic review. *British Journal of Sports Medicine* 45: 351–352, 2011.
64. Kelley G. Mechanical overload and skeletal muscle fiber hyperplasia: a meta-analysis. *Journal of Applied Physiology* 81: 1584–1588, 1996.
65. Knuttgen HG, Nordesjo LO, Ollander B, and Saltin B. Physical conditioning through interval training with young male adults. *Medicine & Science in Sports* 5: 220–226, 1973.
66. Kolbe T, Dennis SC, Selley E, Noakes TD, and Lambert MI. The relationship between critical power and running performance. *Journal of Sports Science* 13: 265–269, 1995.
67. Krieger JW. Single versus multiple sets of resistance exercise: a meta-regression. *Journal of Strength and Conditioning Research* 23: 1890–1901, 2009.
68. Krieger JW. Single vs. multiple sets of resistance exercise for muscle hypertrophy: a meta-analysis. *Journal of Strength and Conditioning Research* 24: 1150–1159, 2010.
69. Laursen PB, and Jenkins DG. The scientific basis for high-intensity interval training: optimising training programmes and maximising performance in highly trained endurance athletes. *Sports Medicine* 32: 53–73,

2002.

70. Levine BD, and Stray-Gundersen J. Living high training low: effect of moderate-altitude acclimatization with low-altitude training on performance. *Journal of Applied Physiology* 83: 102–112, 1997.

71. Lewis P, Ruby D, and Bush-Joseph C. Muscle soreness and delayed onset muscle soreness. *Clinics in Sports Medicine* 31: 255–262, 2012.

72. Lunby, C and Robach P. Performance enhancement: what are the physiological limits? *Physiology*. 30: 282–292, 2015.

73. Manning RJ, Graves JE, Carpenter DM, Leggett SH, and Pollock ML. Constant vs variable resistance knee extension training. *Medicine & Science in Sports & Exercise* 22: 397–401, 1990.

74. Maridaki M. Heritability of neuromuscular performance and anaerobic power in preadolescent and adolescent girls. *Journal of Sports Medicine and Physical Fitness* 46: 540–547, 2006.

75. Marques-Jimenez, D, Calleja-Gonzalez J, Arratibel I, Delextrat A, and Terrados N. Are compression garments effective for recovery of exercise-induced muscle damage? A systematic meta-analysis. *Physiology & Behavior* 153:133–148, 2016.

76. Mazzeo RS. Physiological responses to exercise at altitude: an update. *Sports Medicine* 38: 1–8, 2008.

77. McArdle W, Katch F, and Katch V. *Exercise Physiology: Energy, Nutrition, and Human Performance*. Baltimore, MD: Lippincott Williams & Wilkins, 1996.

78. McCarthy JP, Pozniak MA, and Agre JC. Neuromuscular adaptations to concurrent strength and endurance training. *Medicine & Science in Sports & Exercise* 34: 511–519, 2002.

79. McGowen C, Pyne B, Thompson K, and Rattray B. Warm-up strategies for sport and exercise: mechanisms and applications. *Sports Medicine* 45: 1523–1546, 2015.

80. McHugh MP, Connolly DA, Eston RG, and Gleim GW. Exercise-induced muscle damage and potential mechanisms for the repeated bout effect. *Sports Medicine* 27: 157–170, 1999.

81. McHugh MP, and Cosgrave CH. To stretch or not to stretch: the role of stretching in injury prevention and performance. *Scandinavian Journal of Medicine and Sciences in Sports* 20: 169–181, 2010.

82. Medbo JI, and Burgers S. Effect of training on the anaerobic capacity. *Medicine & Science in Sports & Exercise* 22: 501–507, 1990.

83. Micheli L. Injuries and prolonged exercise. In *Prolonged Exercise*, edited by Lamb D, and Murray R. Indianapolis, IN: Benchmark Press, 1988, pp. 393–407.

84. Midgley AW, McNaughton LR, and Jones AM. Training to enhance the physiological determinants of long-distance running performance: can valid recommendations be given to runners and coaches based on current scientific knowledge? *Sports Medicine* 37: 857–880, 2007.

85. Midgley AW, McNaughton LR, and Wilkinson M. Is there an optimal training intensity for enhancing the

maximal oxygen uptake of distance runners?: empirical research findings, current opinions, physiological rationale and practical recommendations. *Sports Medicine* 36: 117–132, 2006.

86. Morrow JR, Jr., and Hosler WW. Strength comparisons in untrained men and trained women athletes. *Medicine & Science in Sports & Exercise* 13: 194–197, 1981.

87. Noakes TD. Implications of exercise testing for prediction of athletic performance: a contemporary perspective. *Medicine & Science in Sports & Exercise* 20: 319–330, 1988.

88. Noakes TD, Myburgh KH, and Schall R. Peak treadmill running velocity during the $\dot{V}O_2$ max test predicts running performance. *Journal of Sports Sciences* 8: 35–45, 1990.

89. Passiakos, SM, McLellan TM, and Lieberman HR. The effects of protein supplements on muscle mass, strength, and aerobic and anaerobic power in healthy adults: A systematic review. 45: 111–131, 2015.

90. Peterson MD, Rhea MR, and Alvar BA. Applications of the dose-response for muscular strength development: a review of meta-analytic efficacy and reliability for designing training prescription. *Journal of Strength and Conditioning Research* 19: 950–958, 2005.

91. Phillips S. Dietary protein requirements and adaptive advantages in athletes. *British Journal of Nutrition* 108: S158–S167, 2012.

92. Proske U, and Allen TJ. Damage to skeletal muscle from eccentric exercise. *Exercise and Sport Sciences Reviews* 33: 98–104, 2005.

93. Powers SK, Dodd S, and Garner R. Precision of ventilatory and gas exchange alterations as a predictor of the anaerobic threshold. *European Journal of Applied Physiology and Occupational Physiology* 52: 173–177, 1984.

94. Rankinen T, Bray MS, Hagberg JM, Perusse L, Roth SM, Wolfarth B, et al. The human gene map for performance and health-related fitness phenotypes: the 2005 update. *Medicine & Science in Sports & Exercise* 38: 1863–1888, 2006.

95. Rhea MR, and Alderman BL. A meta-analysis of periodized versus nonperiodized strength and power training programs. *Research Quarterly for Exercise & Sport* 75: 413–422, 2004.

96. Sale DG, Jacobs I, MacDougall JD, and Garner S. Comparison of two regimens of concurrent strength and endurance training. *Medicine & Science in Sports & Exercise* 22: 348–356, 1990.

97. Saltin B, Blomqvist G, Mitchell JH, Johnson RL, Jr., Wildenthal K, and Chapman CB. Response to exercise after bed rest and after training. *Circulation* 38: VII 1–78, 1968.

98. Schoenfeld B. Potential mechanisms for a role of metabolic stress in hypertrophic adaptations to resistance training. *Sports Medicine* 43: 179–194, 2013.

99. Scott BK and Houmard JA. Peak running velocity is highly related to distance running performance.

- International Journal of Sports Medicine 15: 504–507, 1994.
100. Seiler S. What is best practice for training intensity and duration distribution in endurance athletes? *International Journal of Sports Physiology and Performance* 5: 276–291, 2010.
101. Staron RS, Malicky ES, Leonardi MJ, Falkel JE, Hagerman FC, and Dudley GA. Muscle hypertrophy and fast fiber type conversions in heavy resistance-trained women. *European Journal of Applied Physiology and Occupational Physiology* 60: 71–79, 1990.
102. Tanaka K, Matsuura Y, Kumagai S, Matsuzaka A, Hirakoba K, and Asano K. Relationships of anaerobic threshold and onset of blood lactate accumulation with endurance performance. *European Journal of Applied Physiology and Occupational Physiology* 52: 51–56, 1983.
103. Vogt M, and Hoppeler H. Is hypoxia training good for muscles and exercise performance? *Progress in Cardiovascular Diseases* 52: 525–533, 2010.
104. Wasserman K, Whipp BJ, Koyl SN, and Beaver WL. Anaerobic threshold and respiratory gas exchange during exercise. *Journal of Applied Physiology* 35: 236–243, 1973.
105. Wehrlin JP, Zuest P, Hallen J, and Marti B. Live high-train low for 24 days increases hemoglobin mass and red cell volume in elite endurance athletes. *Journal of Applied Physiology* 100: 1938–1945, 2006.
106. Weltman A, Snead D, Stein P, Seip R, Schurrer R, Rutt R, and Weltman J. Reliability and validity of a continuous incremental treadmill protocol for the determination of lactate threshold, fixed blood lactate concentrations, and $\dot{V}O_2$ max. *International Journal of Sports Medicine* 11: 26–32, 1990.
107. Wilson JM, Marin PJ, Rhea MR, Wilson SM, Loenneke JP, and Anderson JC. Concurrent training: a meta-analysis examining interference of aerobic and resistance exercises. *Journal of Strength and Conditioning Research* 26: 2293–2307, 2012.
108. Wilmore JH. Alterations in strength, body composition and anthropometric measurements consequent to a 10-week weight training program. *Medicine & Science in Sports* 6: 133–138, 1974.
109. Wyatt F, Donaldson A, and Brown E. The overtraining syndrome: A meta-analytic review. *Journal of Exercise Physiology* 16:12–23, 2013.
- Cavalheiro EA. Physical exercise in rats with epilepsy is protective against seizures: evidence of animal studies. *Arquivos de Neuro-psiquiatria* 67: 1013–1016, 2009.
5. Arida R, Guimaraes de Almeda AC, Cavalheiro EA, and Scorza F. Experimental and clinical findings from physical exercise as complementary therapy for epilepsy. *Epilepsy and Behavior* 26: 273–278, 2013.
6. Armstrong N, and Barker AR. Endurance training and elite young athletes. *Medicine and Sport Science* 56: 59–83, 2011.
7. Armstrong N, and McManus AM. Physiology of elite young male athletes. *Medicine and Sport Science* 56: 1–22, 2011.
8. Artal R, and O’Toole M. Guidelines of the American College of Obstetricians and Gynecologists for exercise during pregnancy and the postpartum period. *British Journal of Sports Medicine* 37: 6–12; discussion 12, 2003.
9. Åstrand P. Girl swimmers. *Acta Paediatrica Scandinavica* 147(Suppl): 1–75, 1963.
10. Barrack MT, Ackerman KE, and Gibbs JC. Update on the female athlete triad. *Current Reviews in Musculoskeletal Medicine* 6: 195–204, 2013.
11. Barrack MT, Gibbs JC, De Souza MJ, Williams NI, Nichols JF, Rauh MJ, and Nattiv A. Higher incidence of bone stress injuries with increasing female athlete triad-related factors. *American Journal of Sports Medicine* 42: 949–958, 2014.
12. Behm DG, Faigenbaum AD, Falk B, and Klentrou P. Canadian Society for Exercise Physiology position paper: resistance training in children and adolescents. *Applied Physiology Nutrition and Metabolism* 33: 547–561, 2008.
13. Beilock SL, Feltz DL, and Pivarnik JM. Training patterns of athletes during pregnancy and postpartum. *Research Quarterly for Exercise & Sport* 72: 39–46, 2001.
14. Benjamin HJ. The female adolescent athlete: specific concerns. *Pediatric Annals* 36: 719–726, 2007.
15. Bennett D. Sports and epilepsy: to play or not to play. *Seminars in Neurology* 1: 345–357, 1981.
16. Bhaskarabhatla KV, and Birrer R. Physical activity and diabetes mellitus. *Comprehensive Therapy* 31: 291–298, 2005.
17. Bien DP. Rationale and implementation of anterior cruciate ligament injury prevention warm-up programs in female athletes. *Journal of Strength and Conditioning Research* 25: 271–285, 2011.
18. Birch K. Female athlete triad. *British Medical Journal* 330: 244–246, 2005.
19. Blaize, A, Pearson K, and Newcomer S. Impact of maternal exercise during pregnancy on offspring chronic disease susceptibility. *Exercise and Sport Sciences Reviews* 43:198–203, 2015.
20. Brandt A, and O’Keefe C. Integration of 12-lead electrocardiogramss into preparticipation screenings to prevent sudden cardiac death in highschool athletes. *Journal of Pediatric Health Care* 33:153–161, 2019.
21. Brophy RH, Silvers HJ, and Mandelbaum BR. Anterior cruciate ligament injuries: etiology and prevention.

Chapter 21

1. Ackerman KE, and Misra M. Bone health and the female athlete triad in adolescent athletes. *Physician and Sports Medicine* 39: 131–141, 2011.
2. Andersen AE. Anorexia nervosa and bulimia: a spectrum of eating disorders. *Journal of Adolescent Health Care* 4: 15–21, 1983.
3. Arida RM, Cavalheiro EA, de Albuquerque M, da Silva AC, and Scorza FA. Physical exercise in epilepsy: the case in favor. *Epilepsy and Behavior* 11: 478–479, 2007.
4. Arida RM, Scorza FA, Terra VC, Cysneiros RM, and

- Sports Medicine and Arthroscopy Review 18: 2–11, 2010.
22. Buford TW, Anton SD, Judge AR, Marzetti E, Wohlgemuth SE, Carter CS, et al. Models of accelerated sarcopenia: critical pieces for solving the puzzle of age-related muscle atrophy. *Ageing Research Reviews* 9: 369–383, 2010.
23. Bullen BA, Skrinar GS, Beitins IZ, von Mering G, Turnbull BA, and McArthur JW. Induction of menstrual disorders by strenuous exercise in untrained women. *New England Journal of Medicine* 312: 1349–1353, 1985.
24. Burger LJ, Lopez RI, and Elliott FA. Tonic seizures induced by movement. *Neurology* 22: 656–659, 1972.
25. Castelo-Branco C, Reina F, Montivero AD, Colodron M, and Vanrell JA. Influence of high-intensity training and of dietetic and anthropometric factors on menstrual cycle disorders in ballet dancers. *Gynecological Endocrinology* 22: 31–35, 2006.
26. Cook B, Wonderlich S, Mitchell J, Thompson R, Sherman R, and McCallum K. Exercise in eating disorders treatment: systematic review and proposal guidelines. *Medicine and Science in Sports and Exercise* 48: 1408–1414, 2016.
27. Coop CA, Adams KE, and Webb CN. SCUBA diving and asthma: Clinical recommendations and safety. *Clinical Reviews in Allergy & Immunology* 50:18–22, 2016.
28. Corrado D, Basso C, Pavei A, Michieli P, Schiavon M, and Thiene G. Trends in sudden cardiovascular death in young competitive athletes after implementation of a preparticipation screening program. *JAMA* 296: 1593–1601, 2006.
29. Costigan S, Eather, N, Plotnikoff R, Taaffe D, and Lubans D. High-intensity interval training for improving health-related fitness in adolescents: a systematic review and meta-analysis. *British Journal of Sports Medicine* 49:1253–1261, 2015.
30. Dale E, Gerlach DH, and Wilhite AL. Menstrual dysfunction in distance runners. *Obstetrics & Gynecology* 54: 47–53, 1979.
31. Dalle Grave R. Eating disorders: progress and challenges. *European Journal of Internal Medicine* 22: 153–160, 2011.
32. de Jonge X, Thompson B, and Han A. Methodological recommendations for menstrual cycle research in sports and exercise. *Medicine and Science in Sports and Exercise* 51: 2610–2617, 2019.
33. De Souza MJ. Menstrual disturbances in athletes: a focus on luteal phase defects. *Medicine & Science in Sports & Exercise* 35: 1553–1563, 2003.
34. De Souza MJ, and Metzger DA. Reproductive dysfunction in amenorrheic athletes and anorexic patients: a review. *Medicine & Science in Sports & Exercise* 23: 995–1007, 1991.
35. Drezner J, and Corrado D. Is there evidence for recommending electrocardiogram as part of the pre-participation examination? *Clinical Journal of Sport Medicine* 21: 18–24, 2011.
36. Drinkwater BL, Bruemner B, and Chesnut CH, III. Menstrual history as a determinant of current bone density in young athletes. *JAMA* 263: 545–548, 1990.
37. Drinkwater BL, Nilson K, Chesnut CH, III, Bremner WJ, Shainholtz S, and Southworth MB. Bone mineral content of amenorrheic and eumenorrheic athletes. *New England Journal of Medicine* 311: 277–281, 1984.
38. Dugan SA. Sports-related knee injuries in female athletes: what gives? *American Journal of Physical Medicine & Rehabilitation* 84: 122–130, 2005.
39. Ekblom B. Effect of physical training in adolescent boys. *Journal of Applied Physiology* 27: 350–355, 1969.
40. Enea C, Boisseau N, Fargeas-Gluck MA, Diaz V, and Dugue B. Circulating androgens in women: exercise-induced changes. *Sports Medicine* 41: 1–15, 2011.
41. Enea C, Boisseau N, Ottavy M, Mulliez J, Millet C, Ingrand I, et al. Effects of menstrual cycle, oral contraception, and training on exercise-induced changes in circulating DHEA-sulphate and testosterone in young women. *European Journal of Applied Physiology* 106: 365–373, 2009.
42. Eriksson BO. Physical training, oxygen supply and muscle metabolism in 11–13-year old boys. *Acta Physiologica Scandinavica. Supplementum* 384: 1–48, 1972.
43. Faigenbaum AD, Kraemer WJ, Blimkie CJ, Jeffreys I, Micheli LJ, Nitka M, et al. Youth resistance training: updated position statement paper from the National Strength and Conditioning Association. *Journal of Strength and Conditioning Research* 23: S60–79, 2009.
44. Faigenbaum AD, Loud RL, O’Connell J, Glover S, and Westcott WL. Effects of different resistance training protocols on upper-body strength and endurance development in children. *Journal of Strength and Conditioning Research* 15: 459–465, 2001.
45. Faigenbaum AD, Milliken LA, and Westcott WL. Maximal strength testing in healthy children. *Journal of Strength and Conditioning Research* 17: 162–166, 2003.
46. Faigenbaum AD, and Myer GD. Resistance training among young athletes: safety, efficacy and injury prevention effects. *British Journal of Sports Medicine* 44: 56–63, 2010.
47. Faigenbaum AD, Loyd RS, and Myer GD. Youth resistance training: past practices, new perspectives, and future directions. *Pediatric Exercise Science* 25: 591–604, 2013.
48. Faulkner JA, Larkin LM, Claflin DR, and Brooks SV. Age-related changes in the structure and function of skeletal muscles. *Clinical and Experimental Pharmacology and Physiology* 34: 1091–1096, 2007.
49. Feicht CB, Johnson TS, Martin BJ, Sparkes KE, and Wagner WW, Jr. Secondary amenorrhoea in athletes. *Lancet* 2: 1145–1146, 1978.
50. Fitzpatrick KK, and Lock J. Anorexia nervosa. *BMJ Clinical Evidence (Online)* 2011: 2011.
51. Fountain NB, and May AC. Epilepsy and athletics. *Clinics in Sports Medicine* 22: 605–616, x–xi, 2003.
52. Gibbs JC, Williams NI, and De Souza MJ. Prevalence of individual and combined components of the female athlete triad. *Medicine & Science in Sports & Exercise* 45: 985–996, 2013.
53. Gotze W, Kubicki S, Munter M, and Teichmann J.

- Effect of physical exercise on seizure threshold (investigated by electroencephalographic telemetry). *Diseases of the Nervous System* 28: 664–667, 1967.
54. Hale R. Factors important to women engaged in vigorous physical activity. In: *Sports Medicine*, edited by Strauss R. Philadelphia, PA: W. B. Saunders, 1984.
55. Hewett TE, Lindenfeld TN, Riccobene JV, and Noyes FR. The effect of neuromuscular training on the incidence of knee injury in female athletes: a prospective study. *American Journal of Sports Medicine* 27: 699–706, 1999.
56. Hoch AZ, et al. Prevalence of the female athlete triad in high school athletes and sedentary students. *Clinical Journal of Sport Medicine* 19:421–428, 2009.
57. Hudson J, Hiripi E, Pope H, and Kessler R. The prevalence and correlated of eating disorders in the National Comorbidity Survey Replication. *Biological Psychiatry* 61:348–358, 2010.
58. Ingjer F. Development of maximal oxygen uptake in young elite male cross-country skiers: a longitudinal study. *Journal of Sports Sciences* 10: 49–63, 1992.
59. Jackson AS, Sui X, Hebert JR, Church TS, and Blair SN. Role of lifestyle and aging on the longitudinal change in cardiorespiratory fitness. *Archives of Internal Medicine* 169: 1781–1787, 2009.
60. Joy E, De Souza MJ, Nattiv A, Misra M, Williams NI, Mallinson RJ, et al. Female athlete triad coalition consensus statement on treatment and return to play of the female athlete triad. *Current Sports Medicine Reports* 13:219–231, 2014.
61. Joy E, Kussman A, and Nattiv A. 2016 Update on eating disorders in athletes: A comprehensive narrative review with a focus on clinical assessment and management. *British Journal of Sports Medicine* 50:154–162, 2016.
62. Kanopka J, Hsue L, and Dragoo J. Effect of oral contraceptives on soft tissue injury risk, soft tissue laxity, and muscle strength. *Orthopedic Journal of Sports Medicine* 7: 1–11, 2019.
63. Koltun K, Strock N, Southmayd E, Oneglia A, Williams N, and De Souza M. Comparison of female athlete triad coalition and RED-S risk assessment tools. *Journal of Sports Medicine* 37(21): 2433–2442, 2019.
64. Komatsu WR, Gabbay MA, Castro ML, Saraiva GL, Chacra AR, de Barros Neto TL, and Dib SA. Aerobic exercise capacity in normal adolescents and those with type 1 diabetes mellitus. *Pediatric Diabetes* 6: 145–149, 2005.
65. Kuijter A. Epilepsy and exercise, electroencephalographical and biochemical studies. In *Advances in Epileptology: The X Epilepsy International Symposium*, edited by Wada J, and Penry J. New York, NY: Raven Press, 1980.
66. La Gerche A, Baggish AL, Knuuti J, Prior DL, Sharma S, Heidbuchel H, et al. Cardiac imaging and stress testing asymptomatic athletes to identify those at risk of sudden cardiac death. *JACC Cardiovascular Imaging* 6: 993–1007, 2013.
67. Lloyd RS, Faigenbaum AD, Stone MH, J. L. Oliver, I. Jeffreys, J. A. Moody, et al. Position statement on youth resistance training: the 2014 international consensus. *British Journal of Sports Medicine*, September 20, 2013, doi: 10.1136/bjsports-2013–092952.
68. Luong, MW, Morrison B, Lithwick D, Isserow SH, Heibron B, and Krahn A. Sudden cardiac death in young competitive athletes. *British Columbia Medical Journal* 58:138–144, 2016.
69. Manore MM, Kam LC, and Loucks AB. The female athlete triad: components, nutrition issues, and health consequences. *Journal of Sports Sciences* 25 Suppl 1: S61–71, 2007.
70. Martinsen M, Bratland-Sanda S, Eriksson AK, and Sundgot-Borgen J. Dieting to win or to be thin? A study of dieting and disordered eating among adolescent elite athletes and non-athlete controls. *British Journal of Sports Medicine* 44: 70–76, 2010.
71. McManus AM, and Armstrong N. Physiology of elite young female athletes. *Medicine and Sport Science* 56: 23–46, 2011.
72. Mendes FA, Almeida FM, Cukier A, Stelmach R, Jacob-Filho W, Martins MA, et al. Effects of aerobic training on airway inflammation in asthmatic patients. *Medicine & Science in Sports & Exercise* 43: 197–203, 2011.
73. Micheli L. *Pediatric and Adolescent Sports Medicine*. Philadelphia, PA: W. B. Saunders, 1984.
74. Micheli LJ, Smith A, Biosca F, and Sangenis P. Position statement on girls and women in sport. IOC, 2002.
75. Miller CA, and Golden NH. An introduction to eating disorders: clinical presentation, epidemiology, and prognosis. *Nutrition in Clinical Practice* 25: 110–115, 2010.
76. Morton AR, and Fitch KD. Australian Association for Exercise and Sports Science position statement on exercise and asthma. *Journal of Science and Medicine in Sport* 14: 312–316, 2011.
77. Mountjoy M et al. The IOC consensus statement: beyond the female athlete triad—relative energy deficiency in sport. *British Journal of Sports Medicine* 48:491–497, 2014.
78. Narici MV, and Maffulli N. Sarcopenia: characteristics, mechanisms and functional significance. *British Medical Bulletin* 95: 139–159, 2010.
79. Nascimento SL, Surita FG, and Cecatti JG. Physical exercise during pregnancy: a systematic review. *Current Opinion in Obstetrics and Gynecology* 24:387–394, 2012.
80. Nattiv A, Loucks AB, Manore MM, Sanborn CF, Sundgot-Borgen J, and Warren MP. American College of Sports Medicine position stand. The female athlete triad. *Medicine & Science in Sports & Exercise* 39: 1867–1882, 2007.
81. Nottin S, Vinet A, Stecken F, N’Guyen LD, Ounissi F, Lecoq AM, et al. Central and peripheral cardiovascular adaptations to exercise in endurance-trained children. *Acta Physiologica Scandinavica* 175: 85–92, 2002.
82. Oosthuyse T, and Bosch A. The effect of the menstrual cycle on exercise metabolism. *Sports Medicine* 40: 207–227, 2010.
83. Padua D, Distefano L, Hewett T, Garrett W, Marshall S, Golden G, et al. National Athletic Trainers’

Association position statement: prevention of anterior cruciate ligament injury. *Journal of Athletic Training* 53: 5–19, 2018.

84. Pimentel , Tojal R, and Morgado J. Epilepsy and physical exercise. *Seizure* 25: 87–94, 2015.
85. Pivarnik JM, Marichal CJ, Spillman T, and Morrow JR, Jr. Menstrual cycle phase affects temperature regulation during endurance exercise. *Journal of Applied Physiology* 72: 543–548, 1992.
86. Pruet E. Insulin and exercise in the non-diabetic man. In *Exercise Physiology*, edited by Fotherly K, and Pal S. New York, NY: Walter de Gruyter, 1985.
87. Roberts A, et al. Do youth with type 1 diabetes exercise safely? A focus on patient practices with glycemic outcomes. *Pediatric Diabetes* doi: 10.1111/peidi.12402, 2016.
88. Scheid JL, and De Souza MJ. Menstrual irregularities and energy deficiency in physically active women: the role of ghrelin, PYY and adipocytokines. *Medicine and Sport Science* 55: 82–102, 2010.
89. Schwartz F, Marling C, and Bunesco R. The promise and perils of wearable physiological sensors for diabetes management. *Journal of Diabetes Science and Technology* 12: 587–591, 2018.
90. Specker B, Thix N, and Sudhagoni R. Does exercise influence pediatric bone? A systematic review. *Clinical Orthopaedics and Related Research* 473:3658–3672, 2015.
91. Stice E, Marti CN, and Rohde P. Prevalence, incidence, impairment, and course of the proposed DSM-5 eating disorder diagnoses in an 8-year prospective community study of young women. *Journal of Abnormal Psychology* 122: 445–457, 2013.
92. Sung E, Han A, Hinrichs T, Vorgerd M, Manchado C, and Platen P. Effect of follicular versus luteal-phase based strength training in young women. *Springer Plus* 3:1–10, 2014.
93. Tanaka H, and Seals DR. Endurance exercise performance in masters athletes: age-associated changes and underlying physiological mechanisms. *Journal of Physiology* 586: 55–63, 2008.
94. Torstveit MK, and Sundgot-Borgen J. The female athlete triad exists in both elite athletes and controls. *Medicine & Science in Sports & Exercise* 37: 1449–1459, 2005.
95. Warren MP, and Chua A. Exercise-induced amenorrhea and bone health in the adolescent athlete. *Annals of the New York Academy of Sciences* 1135: 244–252, 2008.
96. Weltman A, Janney C, Rians CB, Strand K, Berg B, Tippitt S, et al. The effects of hydraulic resistance strength training in pre-pubertal males. *Medicine & Science in Sports & Exercise* 18: 629–638, 1986.
97. Yager J, and Andersen AE. Clinical practice: anorexia nervosa. *New England Journal of Medicine* 353: 1481–1488, 2005.
98. Zelisko JA, Noble HB, and Porter M. A comparison of men's and women's professional basketball injuries. *American Journal of Sports Medicine* 10: 297–299, 1982.
99. Zilmer D. Gender specific injury patterns in high

school varsity basketball. *Journal of Women's Health* 1: 69–76, 1992.

Chapter 22

1. Ahlberg B. Muscle glycogen and muscle electrolytes during prolonged physical exercise. *Acta Physiologica Scandinavica* 70: 129–142, 1967.
2. American College of Sports Medicine. Exercise and fluid replacement. *Medicine and Science in Sports and Exercise* 39: 2007.
3. American College of Sports Medicine. Nutrition and athletic performance. *Medicine and Science in Sports and Exercise* 48: 543–568, 2016.
4. Aragon AA and Schoenfeld BJ. Nutrient timing revisited: is there a post-exercise anabolic window. *Journal of the International Society of Sports Nutrition*. 10: 5–16, 2013.
5. Armstrong LE, Casa DJ, Maresh CM, and Ganio MS. Caffeine, fluid-electrolyte balance, temperature regulation, and exercise-heat tolerance. *Exercise and Sport Sciences Reviews* 35: 135–140, 2007.
6. Arnall DA, Nelson AG, Quigley J, Lex S, Dehart T, and Fortune P. Supercompensated glycogen loads persist 5 days in resting trained cyclists. *European Journal of Applied Physiology* 99: 251–256, 2007.
7. Beelen M, Berghuis J, Bonoparte B, Ballak SB, Jeukendrup AE, and van Loon LJC. Carbohydrate mouth rinsing in the fed state: lack of enhancement of time-trial performance. *International Journal of Sport Nutrition and Exercise Metabolism* 19: 2009.
8. Beelen M, Burke LM, Gibala MJ, and van Loon, LJC. Nutritional strategies to promote post-exercise recovery. *International Journal of Sports Nutrition and Exercise Metabolism*. 20: 515–532, 2010.
9. Belko AZ. Vitamins and exercise: an update. *Medicine and Science in Sports and Exercise* 19: S191–196, 1987.
10. Bergström J, Hermansen L, Hultman E, and Saltin B. Diet, muscle glycogen and physical performance. *Acta Physiol Scand* 71: 140–150, 1967.
11. Bergström J and Hultman E. Muscle glycogen synthesis after exercise: an enhancing factor localized to the muscle cells in man. *Nature* 210: 309–310, 1966.
12. Bermejo F and Garcia-Lopez S. A guide to diagnosis of iron deficiency and iron deficiency anemia in digestive disorders. *World Journal of Gastroenterology* 15: 4638–4643, 2009.
13. Borrione P, Grasso L, Quaranta F, and Parisi A. FIMS position statement 2009: vegetarian diet and athletes. *International SportMed Journal* 10: 53–60, 2009.
14. Bosse JD and Dixon BM. Dietary protein to maximize resistance training: a review and examination of protein spread and change theories. *Journal of the International Society of Sports Nutrition* 9: 42–53, 2012.
15. Braakhuis AJ. Effect of vitamin C on physical performance. *Current Sports Medicine Reports* 11: 180–184, 2012.
16. Brotherhood JR. Nutrition and Sports Performance. *Sports Medicine*. 1: 350–389, 1984.
17. Burke LM, Hawley JA, Wong SHS, and Jeukendrup AE. Carbohydrates for training and competition.

- Journal of Sports Sciences. 29(S1): S17–S27, 2011.
18. Burke LM, Jeukendrup AE, Jones A, and Mooses M. Contemporary nutrition strategies to optimize performance in distance runners and race walkers. *International Journal of Sport Nutrition and Exercise Metabolism* 29: 117–129, 2019.
 19. Bussau VA, Fairchild TJ, Rao A, Steele P, and Fournier PA. Carbohydrate loading in human muscle: an improved 1 day protocol. *European Journal of Applied Physiology* 87: 290–295, 2002.
 20. Butterfield G. Amino acids and high protein diets. In *Ergogenics: Enhancement of Performance in Exercise and Sport*, edited by Lamb D, and Williams M. Carmel, CA: Brown & Benchmark, 1991, pp. 87–117.
 21. Butterfield GE. Whole-body protein utilization in humans. *Medicine and Science in Sports and Exercise* 19: S157–165, 1987.
 22. Butterfield GE and Calloway DH. Physical activity improves protein utilization in young men. *British Journal of Nutrition* 51: 171–184, 1984.
 23. Campbell WW. Synergistic use of higher-protein diets or nutritional supplements with resistance training to counter sarcopenia. *Nutrition Reviews* 65: 416–422, 2007.
 24. Carter III R. Exertional heat illness and hyponatremia: an epidemiological prospective. *Current Sports Medicine Reports* 7: S20–S27, 2008.
 25. Carter J, Jeukendrup AE, Mundel T, and Jones DA. Carbohydrate supplementation improves moderate and high-intensity exercise in the heat. *Pflügers Arch* 446: 211–219, 2003.
 26. Casa DJ, Clarkson PM, and Roberts WO. American College of Sports Medicine roundtable on hydration and physical activity: consensus statements. *Current Sports Medicine Reports* 4: 115–127, 2005.
 27. Cermak NM and van Loon L. The use of carbohydrate during exercise as an ergogenic aid. *Sports Medicine* 43: 1139–1155, 2013.
 28. Chambers ES, Bridge MW, and Jones DA. Carbohydrate sensing in the human mouth: effects on exercise performance and brain activity. *Journal of Applied Physiology-London* 587: 1779–1794, 2009.
 29. Chryssanthopoulos C, Williams C, and Nowitz A. Influence of a carbohydrate-electrolyte solution ingested during running on muscle glycogen utilisation in fed humans. *International Journal of Sports Medicine* 23: 279–284, 2002.
 30. Clarkson P. Vitamins and trace minerals. In: *Ergogenics: Enhancement of Performance in Exercise and Sport*, edited by Lamb D, and Williams M. Carmel, CA: Brown & Benchmark, 1991, pp. 123–182.
 31. Close GL, Russell J, Cobley JN, Owens DJ, Wilson G, Gregson W, et al. Assessment of vitamin D concentration in non-supplemented professional athletes and health adults during the winter months in the UK: implications for skeletal muscle function. *Journal of Sport Sciences* 31: 344–353, 2013.
 32. Coggan AR, and Coyle EF. Carbohydrate ingestion during prolonged exercise: effects on metabolism and performance. *Exercise and Sport Sciences Reviews* 19: 1–40, 1991.
 33. Constantini N, Dubnov G, Foldes AJ, Mann G, Magazanik A, and Siderer M. High prevalence of iron deficiency and anemia in female military recruits. *Military Medicine* 171: 866–869, 2006.
 34. Costill DL. Sweating: its composition and effects on body fluids. *Annals of the New York Academy of Sciences* 301: 160–174, 1977.
 35. Costill DL and Saltin B. Factors limiting gastric emptying during rest and exercise. *Journal of Applied Physiology* 37: 679–683, 1974.
 36. Costill DL, Sherman WM, Fink WJ, Maresh C, Witten M, and Miller JM. The role of dietary carbohydrates in muscle glycogen resynthesis after strenuous running. *American Journal of Clinical Nutrition* 34: 1831–1836, 1981.
 37. Coyle E. Fluid and fuel intake during exercise. *Journal of Sports Science* 22: 39–55, 2004.
 38. Coyle EF, Costill DL, Fink WJ, and Hoopes DG. Gastric emptying rates for selected athletic drinks. *Research Quarterly* 49: 119–124, 1978.
 39. Coyle EF, Hagberg JM, Hurley BF, Martin WH, Ehsani AA, and Holloszy JO. Carbohydrate feeding during prolonged strenuous exercise can delay fatigue. *Journal of Applied Physiology* 55: 230–235, 1983.
 40. Coyle EF and Montain SJ. Benefits of fluid replacement with carbohydrate during exercise. *Medicine and Science in Sports and Exercise* 24: S324–330, 1992.
 41. Davies C. Glucose inhibits CO₂ production from leucine during whole body exercise in man. *Journal of Physiology* 332: 40–41, 1982.
 42. Davies KJ, Donovan CM, Refino CJ, Brooks GA, Packer L, and Dallman PR. Distinguishing effects of anemia and muscle iron deficiency on exercise bioenergetics in the rat. *American Journal of Physiology* 246: E535–543, 1984.
 43. Davies KJ, Maguire JJ, Brooks GA, Dallman PR, and Packer L. Muscle mitochondrial bioenergetics, oxygen supply, and work capacity during dietary iron deficiency and repletion. *American Journal of Physiology* 242: E418–427, 1982.
 44. Davis JM, Burgess WA, Slentz CA, Bartoli WP, and Pate RR. Effects of ingesting 6% and 12% glucose/electrolyte beverages during prolonged intermittent cycling in the heat. *European Journal of Applied Physiology and Occupational Physiology* 57: 563–569, 1988.
 45. Davis JM, Lamb DR, Burgess WA, and Bartoli WP. Accumulation of deuterium oxide in body fluids after ingestion of D₂O-labeled beverages. *Journal of Applied Physiology* 63: 2060–2066, 1987.
 46. Deakin V. Prevention, detection and treatment of iron depletion and deficiency in athletes. In: *Clinical Sports Nutrition*, edited by Burke LM, and Deakin V. New York, NY: McGraw-Hill, 2010, pp. 222–267.
 47. Diehl DM, Lohman TG, Smith SC, and Kertzer R. Effects of physical training and competition on the iron status of female field hockey players. *International Journal of Sports Medicine* 7: 264–270, 1986.
 48. Drinkwater BL, Nilson K, Chesnut CH, III, Bremner

- WJ, Shainholtz S, and Southworth MB. Bone mineral content of amenorrheic and eumenorrheic athletes. *New England Journal of Medicine* 311: 277–281, 1984.
49. Eichner ER. Genetic and other determinants of sweat rate. *Current Sports Medicine Reports* 7: S36–S40, 2008.
50. Fairchild TJ, Fletcher S, Steele P, Goodman C, Dawson B, and Fournier PA. Rapid carbohydrate loading after a short bout of near maximal-intensity exercise. *Medicine and Science in Sports and Exercise* 34: 980–986, 2002.
51. Felig P, Cherif A, Minagawa A, and Wahren J. Hypoglycemia during prolonged exercise in normal men. *New England Journal of Medicine* 306: 895–900, 1982.
52. Felig P and Wahren J. Amino acid metabolism in exercising man. *Journal of Clinical Investigation* 50: 2703–2714, 1971.
53. Foster C and Thompson NN. Serial gastric emptying studies: effect of preceding drinks. *Medicine and Science in Sports and Exercise* 22: 484–487, 1990.
54. Friedman JE, Neuffer PD, and Dohm GL. Regulation of glycogen resynthesis following exercise. Dietary considerations. *Sports Medicine* 11: 232–243, 1991.
55. Fuhrman J and Ferreri DM. Fueling the vegetarian (vegan) athlete. *Current Sports Medicine Reports* 9: 233–241, 2010.
56. Gardner GW, Edgerton VR, Senewiratne B, Barnard RJ, and Ohira Y. Physical work capacity and metabolic stress in subjects with iron deficiency anemia. *American Journal of Clinical Nutrition* 30: 910–917, 1977.
57. Garth AK and Burke LM. What do athletes drink during competitive sporting activities? *Sports Medicine*. 43: 539–564, 2013.
58. Gisolfi CV and Duchman SM. Guidelines for optimal replacement beverages for different athletic events. *Medicine and Science in Sports and Exercise* 24: 679–687, 1992.
59. Gledhill N. The influence of altered blood volume and oxygen transport capacity on aerobic performance. *Exercise and Sport Sciences Reviews* 13: 75–93, 1985.
60. Gontzea I, Sutzescu P, and Dumitrache S. The influence of adaptation of physical effort on nitrogen balance in man. *Nutrition Reports International* 11: 231–236, 1975.
61. Gontzea I, Sutzescu P, and Dumitrache S. The influence of muscular activity on nitrogen balance, and on the need of man for protein. *Nutrition Reports International* 10: 35–43, 1974.
62. Goulet EDB. Glycerol-induced hyperhydration: a method for estimating the optimal load of fluid to be ingested before exercise to maximize endurance performance. *Journal of Strength and Conditioning Research* 24: 74–78, 2010.
63. Gropper SS, Blessing D, Dunham K, and Barksdale JM. Iron status of female collegiate athletes involved in different sports. *Biological Trace Element Research* 109: 1–14, 2006.
64. Hamilton MT, Gonzalez-Alonso J, Montain SJ, and Coyle EF. Fluid replacement and glucose infusion during exercise prevent cardiovascular drift. *Journal of Applied Physiology* 71: 871–877, 1991.
65. Haymes EM. Iron. In: *Sports Nutrition*, edited by Driskell JA, and Wolinsky I. Boca Raton, FL: CRC Taylor & Francis, 2006, pp. 203–216.
66. Haymes EM. Nutritional concerns: need for iron. *Medicine and Science in Sports and Exercise* 19: S197–200, 1987.
67. Hegsted M, Schuette SA, Zemel MB, and Linkswiler HM. Urinary calcium and calcium balance in young men as affected by level of protein and phosphorus intake. *Journal of Nutrition* 111: 553–562, 1981.
68. Hermansen L, Hultman E, and Saltin B. Muscle glycogen during prolonged severe exercise. *Acta Physiologica Scand* 71: 129–139, 1967.
69. Hew-Butler T, Rosner MH, Fowkes-Godek S, Dugas JP, Hoffman MD, Lewis DP, et al. Statement of the Third International Exercise-Associated Hyponatremia Consensus Development Conference, Carlsbad, California 2015. *Clinical Journal of Sports Medicine*. 25: 303–320, 2015.
70. Hoffman J. Protein intake: effect of timing. *Strength and Conditioning Journal* 29: 26–34, 2007.
71. Hoffman J, Ratamess N, and Kang J. Effects of protein supplementation on muscular performance and resting hormonal changes in college football players. *Journal of Sports Science and Medicine* 6: 85–92, 2007.
72. Hood DA and Terjung RL. Amino acid metabolism during exercise and following endurance training. *Sports Medicine* 9: 23–35, 1990.
73. Houmard JA, Egan PC, Johns RA, Neuffer PD, Chenier TC, and Israel RG. Gastric emptying during 1 h of cycling and running at 75% $\dot{V}O_2$ max. *Medicine and Science in Sports and Exercise* 23: 320–325, 1991.
74. Houtkooper L and Going S. Body composition: how should it be measured? Does it affect performance? Barrington, IL: Gatorade Sports Science Institute, 1994.
75. Institute of Medicine. Water. In: *Dietary Reference Intakes for Energy, Carbohydrate, Fiber, Fat, Protein and Amino Acids (Macronutrients)*. Washington, D.C.: National Academy Press, 2002, pp. 73–185.
76. Ivy JL. Muscle glycogen synthesis before and after exercise. *Sports Medicine* 11: 6–19, 1991.
77. Ivy JL and Ferguson LM. Optimizing resistance exercise adaptations through the timing of post-exercise carbohydrate-protein supplementation. *Strength and Conditioning Journal* 32: 30–36, 2010.
78. Jeukendrup A. A step towards personalized sports nutrition: carbohydrate intake during exercise. *Sports Medicine* 44: S25–S33, 2014.
79. Jeukendrup AE. Nutrition for endurance sports: marathon, triathlon, and road cycling. *Journal of Sport Sciences* 29: S91–S99, 2011.
80. Jeukendrup A and Killer SC. The myths surrounding pre-exercise carbohydrate feeding. *Annals of Nutrition and Metabolism* 57: 18–25, 2010.
81. Karlsson J and Saltin B. Diet, muscle glycogen, and endurance performance. *Journal of Applied Physiology* 31: 203–206, 1971.
82. Kerstetter JE, O'Brien KO, Caseria DM, Wall DE, and Insogna KL. The impact of dietary protein on calcium

- absorption and kinetic measures of bone turnover in women. *Journal of Clinical Endocrinology and Metabolism* 90: 26–31, 2005.
83. Kerstetter JE, O'Brien KO, and Insogna KL. Dietary protein, calcium metabolism, and skeletal homeostasis revisited. *American Journal of Clinical Nutrition* 78: 584S–592S, 2003.
84. Lanteri P, Lombardi G, Colombini A, and Banfi G. Vitamin D in exercise: physiologic and analytical concerns. *Clinica Chimica Acta* 415: 45–53, 2013.
85. Lemon PW. Do athletes need more dietary protein and amino acids? *International Journal of Sport Nutrition* 5 (Suppl): S39–61, 1995.
86. Lemon PW. Effect of exercise on protein requirements. *Journal of Sports Sciences* 9 Spec No: 53–70, 1991.
87. Lemon PW. Protein and amino acid needs of the strength athlete. *International Journal of Sport Nutrition* 1: 127–145, 1991.
88. Lemon PW. Protein and exercise: update 1987. *Medicine and Science in Sports and Exercise* 19: S179–190, 1987.
89. Lemon PW and Mullin JP. Effect of initial muscle glycogen levels on protein catabolism during exercise. *Journal of Applied Physiology* 48: 624–629, 1980.
90. Mettler S and Zimmermann MB. Iron excess in recreational marathon runners. *European Journal of Clinical Nutrition* 64: 490–494, 2010.
91. Mitchell JB, Costill DL, Houmard JA, Flynn MG, Fink WJ, and Beltz JD. Effects of carbohydrate ingestion on gastric emptying and exercise performance. *Medicine and Science in Sports and Exercise* 20: 110–115, 1988.
92. Nelson JL, Harmon M, and Robergs R. Identifying plasma glycerol concentration associated with urinary glycerol excretion in trained humans. *Journal of Analytical Toxicology* 35: 617–623, 2011.
93. Neuffer PD, Young AJ, and Sawka MN. Gastric emptying during exercise: effects of heat stress and hypohydration. *European Journal of Applied Physiology and Occupational Physiology* 58: 433–439, 1989.
94. Neuffer PD, Young AJ, and Sawka MN. Gastric emptying during walking and running: effects of varied exercise intensity. *European Journal of Applied Physiology and Occupational Physiology* 58: 440–445, 1989.
95. Nikolaidis MG, Kerksick CM, Lamprecht M, and McAnulty. Does vitamin C and E supplementation impair the favorable adaptations of regular exercise? *Oxidative Medicine and Cellular Longevity* 2012: 707941, 2012.
96. Noakes T. Hyponatremia in distance runners: fluid and sodium balance during exercise. *Current Sports Medicine Reports* 1: 197–207, 2002.
97. Noakes TD, Norman RJ, Buck RH, Godlonton J, Stevenson K, and Pittaway D. The incidence of hyponatremia during prolonged ultraendurance exercise. *Medicine and Science in Sports and Exercise* 22: 165–170, 1990.
98. Novack V, Finestone AS, Constantini N, Shpilberg O, Weitzman S, and Merkel D. The prevalence of low hemoglobin values among new infantry recruits and nonlinear relationship between hemoglobin concentration and physical fitness. *American Journal of Hematology* 82: 128–133, 2007.
99. Nybo L. CNS fatigue and prolonged exercise: effect of glucose supplementation. *Medicine and Science in Sports and Exercise* 35: 589–594, 2003.
100. Ogan D and Pritchett K. Vitamin D and the athlete: risks, recommendations and benefits. *Nutrients* 5: 1856–1868, 2013.
101. Owen MD, Kregel KC, Wall PT, and Gisolfi CV. Effects of ingesting carbohydrate beverages during exercise in the heat. *Medicine and Science in Sports and Exercise* 18: 568–575, 1986.
102. Park SG, Bae YJ, Lee YS, and Kim BJ. Effects of rehydration fluid temperature and composition on body weight retention upon voluntary drinking following exercise-induced dehydration. *Nutrition Research and Practice* 6: 126–131, 2012.
103. Peternej TT and Coombes JS. Antioxidant supplementation during exercise training: beneficial or detrimental? *Sports Medicine* 41: 1043–1069, 2011.
104. Phillips SM. The science of muscle hypertrophy: making dietary protein count. *Proceedings of the Nutrition Society* 70: 100–103, 2011.
105. Pitts G, Johnson R, and Consolazio F. Work in the heat as affected by intake of water, salt and glucose. *American Journal of Physiology* 142: 353–359, 1944.
106. Powers S, Nelson WB, and Larson-Meyer E. Antioxidant and vitamin D supplements for athletes: sense or nonsense? *Journal of Sport Sciences* 29: S47–S55, 2011.
107. Quindry J, Kavazis AN, and Powers SK. Exercise-Induced Oxidative Stress: are supplemental antioxidants warranted? In: *Sports Nutrition*, edited by Maughan RJ. Chichester, UK: Wiley Blackwell, 2014, pp. 263–276.
108. Rehrer NJ, Beckers EJ, Brouns F, ten Hoor F, and Saris WH. Effects of dehydration on gastric emptying and gastrointestinal distress while running. *Medicine and Science in Sports and Exercise* 22: 790–795, 1990.
109. Rehrer NJ, Brouns F, Beckers EJ, ten Hoor F, and Saris WH. Gastric emptying with repeated drinking during running and bicycling. *International Journal of Sports Medicine* 11: 238–243, 1990.
110. Rollo I, Cole M, Miller R, and Williams C. Influence of mouth rinsing a carbohydrate solution on 1-hr running performance. *Medicine and Science in Sports and Exercise* 42: 798–804, 2010.
111. Sallis RE. Fluid balance and dysnatremias in athletes. *Current Sports Medicine Reports* 7: S14–S19, 2008.
112. Sedlock DA. The latest on carbohydrate loading: a practical approach. *Current Sports Medicine Reports* 7: 209–213, 2008.
113. Sherman W. Carbohydrate feedings before and after exercise. In: *Perspectives in Exercise Science and Sports Medicine*, edited by Lamb R, and Williams M. New York, NY: McGraw-Hill, 1991.
114. Sherman W. Carbohydrates, muscle glycogen, and muscle glycogen supercompensation. In: *Ergogenic Aids in Sports*, edited by Williams M. Champaign, IL: Human Kinetics, 1983, pp. 3–26.

115. Shi X and Gisolfi CV. Fluid and carbohydrate replacement during intermittent exercise. *Sports Medicine* 25: 157–172, 1998.

116. Shirreffs S, and Sawka M. Fluid and electrolyte needs for training, competition, and recovery. *Journal of Sports Sciences* 29: 39–46, 2011.

117. Smith JW, Zachwieja JJ, Peronnet F, Passe DH, Massicote D, Lavoie C, et al. Fuel selection and cycling endurance performance with ingestion of [13C] glucose: evidence for a carbohydrate dose response. *Journal of Applied Physiology* 108: 1520–1529, 2010.

118. Stachenfeld NS. Sodium ingestion, thirst, and drinking during endurance exercise. *Sports Science Exchange* 27(122): 1–5, 2014.

119. Tan PMS and Lee JKW. The role of fluid temperature and form on endurance performance in the heat. *Scandinavian Journal of Medicine and Science in Sports and Exercise*. 25 (Suppl 1): 39–51, 2015.

120. Todd K, Butterfield G, and Calloway D. Nitrogen balance in men with adequate and deficit energy intake at 3 levels of work. *Journal of Nutrition* 114: 2107–2118, 1984.

121. Utter AC, Kang J, Nieman DC, Dumke CL, McAnulty SR, Vinci DM, et al. Carbohydrate supplementation and perceived exertion during prolonged running. *Medicine and Science in Sports and Exercise* 36: 1036–1041, 2004.

122. Van der Beek EJ. Vitamins and endurance training: food for running or faddish claims? *Sports Medicine* 2: 175–197, 1985.

123. Van Rosendal SP, Osborne MA, Fassett RG, and Coombes JS. Guidelines for glycerol use in hyperhydration and rehydration associated with exercise. *Sports Medicine* 40: 113–139, 2010.

124. Venderley AM and Campbell WW. Vegetarian diets: nutritional considerations for athletes. *Sports Medicine* 36: 293–305, 2006.

125. Vrijens DM and Rehrer NJ. Sodium-free fluid ingestion decreases plasma sodium during exercise in the heat. *Journal of Applied Physiology* 86: 1847–1851, 1999.

126. Watson P, Love TD, Maughan RJ, and Shirreffs SM. A comparison of the effects of milk and a carbohydrate-electrolyte drink on the restoration of fluid capacity in a hot, humid environment. *European Journal of Applied Physiology* 104: 633–642, 2008.

127. White TP and Brooks GA. [U-14C]glucose, alanine, and leucine oxidation in rats at rest and two intensities of running. *American Journal of Physiology* 240: E155–165, 1981.

128. Widmaier EP, Raff H, and Strang KT. *Vander's Human Physiology*. New York, NY: McGraw-Hill, 2008.

129. Williams MH, Anderson DE, and Rawson ES. *Nutrition for Health, Fitness and Sport*. New York, NY: McGraw-Hill, 2013.

130. Wilmore J. Body composition and sports medicine: research considerations. In: Report of the Sixth Ross Conference on Medical Research. Columbus, OH: Ross Laboratories, 1984, pp. 78–82.

131. Wilmore JH. Body composition in sport and exercise:

directions for future research. *Medicine and Science in Sports and Exercise* 15: 21–31, 1983.

Chapter 23

1. Adams WC, Bernauer EM, Dill DB, and Bomar JB, Jr. Effects of equivalent sea-level and altitude training on $\dot{V}O_2$ max and running performance. *Journal of Applied Physiology* 39: 262–266, 1975.
2. Alexander JK, Hartley LH, Modelski M, and Grover RF. Reduction of stroke volume during exercise in man—following ascent to 3,100 m altitude. *Journal of Applied Physiology* 23: 849–858, 1967.
3. American College of Sports Medicine. Position stand: heat and cold illnesses during distance running. *Medicine and Science in Sports and Exercise* 28: i–x, 1996.
4. American College of Sports Medicine. Position stand: prevention of cold injuries during exercise. *Medicine and Science in Sports and Exercise* 38: 2012–2029, 2006.
5. American College of Sports Medicine. Position stand. Exertional heat illness during training and competition. *Medicine and Science in Sports and Exercise* 39: 556–572, 2007.
6. Arsac LM. Effect of altitude on the energetics of human best performances in 100 m running: a theoretical analysis. *European Journal of Applied Physiology*. 87: 78–84, 2002.
7. Balke B, Nagle FJ, and Daniels J. Altitude and maximum performance in work and sports activity. *JAMA* 194: 646–649, 1965.
8. Ballmann C, McGinnis G, Peters B, Slivka D, Cuddy J, Hailes W, et al. Exercise-induced oxidative stress and hypoxic recovery. *European Journal of Applied Physiology* 114: 725–733, 2014.
9. Bittel JH, Nonotte-Varly C, Livecchi-Gonnot GH, Savourey GL, and Hanniquet AM. Physical fitness and thermoregulatory reactions in a cold environment in men. *Journal of Applied Physiology* 65: 1984–1989, 1988.
10. Bos I, De Boever P, Vanparijs J, Pattyn N, Panis LI, and Meeusen R. Subclinical effects of aerobic training in urban environment. *Medicine and Science in Sports and Exercise*. 45: 439–447, 2013.
11. Brauner EV, Forchhammer L, Moller P, Simonsen J, Glasius M, Wahlin P, et al. Exposure to ultrafine particles from ambient air and oxidative stress-induced DNA damage. *Environmental Health Perspectives* 115: 1177–1182, 2007.
12. Brazaitis M, Kamandulis S, Skurvydas A, and Daniuseviciute L. The effect of two kinds of t-shirts on physiological and psychological thermal responses during exercise and recovery. *Applied Ergonomics* 42: 46–51, 2010.
13. Buono MJ and Sjöholm NT. Effect of physical training on peripheral sweat production. *Journal of Applied Physiology* 65: 811–814, 1988.
14. Burton A and Edholm O. *Man in a Cold Environment*. London: Edward Arnold, 1955.

15. Buskirk E and Bass D. Climate and exercise. In: *Science and Medicine of Exercise and Sport*, edited by Johnson W, and Buskirk E. New York, NY: Harper & Row, 1974, pp. 190–205.
16. Buskirk E and Grasley W. Heat injury and conduct of athletics. In: *Science and Medicine of Exercise and Sport*, edited by Johnson W, and Buskirk E. New York, NY: Harper & Row, 1974, pp. 206–210.
17. Buskirk ER, Kollias J, Akers RF, Prokop EK, and Reategui EP. Maximal performance at altitude and on return from altitude in conditioned runners. *Journal of Applied Physiology* 23: 259–266, 1967.
18. Campbell ME, Li Q, Gingrich SE, Macfarlane RG, and Cheng S. Should people be physically active outdoors on smog alert days? *Canadian Journal of Public Health* 96: 24–28, 2005.
19. Cappaert TA, Stone JA, Castellani JW, Krause BA, Smith D, and Stephens BA. National Athletic Trainers' Association position statement: environmental cold injuries. *Journal of Athletic Training* 43: 640–658, 2008.
20. Carter JE and Gisolfi CV. Fluid replacement during and after exercise in the heat. *Medicine and Science in Sports and Exercise* 21: 532–539, 1989.
21. Casa DJ, Armstrong LE, Kenny GP, O'Conner FG, and Huggins RA. Exertional heat stroke: new concepts regarding cause and care. *Current Sports Medicine Reports* 11: 115–123, 2012.
22. Casa DJ, DeMartini JK, Bergeron MF, Csillan D, Eichner ER, Lopez RM, Ferrara MS, Miller KC, O'Connor F, Sawka MN, and Yeargin SW. National Athletic Trainers' Association Position Statement: exertional heat illnesses. *Journal of Athletic Training*. 50: 986–1000, 2015.
23. Casa DJ, McDermott BP, Lee EC, Yeargin SW, Armstrong LE, and Maresh CM. Cold water immersion: the gold standard for exertional heatstroke treatment. *Exercise and Sport Sciences Reviews* 35: 141–149, 2007.
24. Castellani JW and Young AJ. Health and performance challenges during sports training and competition in cold weather. *British Journal of Sports Medicine*. 46: 788–791, 2012.
25. Chapman RF, Stray-Gundersen J, and Levine BD. Individual variation in response to altitude training. *Journal of Applied Physiology* 85: 1448–1456, 1998.
26. Costill DL, Cote R, Miller E, Miller T, and Wynder S. Water and electrolyte replacement during repeated days of work in the heat. *Aviation, Space, and Environmental Medicine* 46: 795–800, 1975.
27. Cutrufello PT, Smoliga JM, and Rundell KW. Small things make a big difference: particulate matter and exercise. *Sports Medicine* 42: 1041–1068, 2012.
28. Cymerman A, Reeves JT, Sutton JR, Rock PB, Groves BM, Malconian MK, et al. Operation Everest II: maximal oxygen uptake at extreme altitude. *Journal of Applied Physiology* 66: 2446–2453, 1989.
29. Daniels J and Oldridge N. The effects of alternate exposure to altitude and sea level on world-class middle-distance runners. *Medicine and Science in Sports* 2: 107–112, 1970.
30. Danielsson U. Windchill and the risk of tissue freezing. *Journal of Applied Physiology* 81: 2666–2673, 1996.
31. Davis JK, and Bishop PA. Impact of clothing on exercise in the heat. *Sports Medicine* 43:695–706, 2013.
32. Devlin RB, Duncan KE, Jardim M, Schmitt MT, Rappold AG, and Diaz-Sanchez D. Controlled exposure of healthy young volunteers to ozone causes cardiovascular effects. *Circulation* 126: 104–111, 2012.
33. Dill DB and Adams WC. Maximal oxygen uptake at sea level and at 3,090-m altitude in high school champion runners. *Journal of Applied Physiology* 30: 854–859, 1971.
34. Doria C, Toniolo L, Verratti V, Cancellara P, Pietrangelo T, Marconi V, et al. Improved V̇O₂ uptake kinetics and shift in muscle fiber type in high-altitude trekkers. *Journal of Applied Physiology* 111:1597–1605, 2011.
35. Drinkwater BL, Denton JE, Kupprat IC, Talag TS, and Horvath SM. Aerobic power as a factor in women's response to work in hot environments. *Journal of Applied Physiology* 41: 815–821, 1976.
36. Ely MR, Chevront SN, and Montain SJ. Neither cloud cover nor low solar loads are associated with fast marathon performance. *Medicine and Science in Sports and Exercise* 39: 2029–2035, 2007.
37. Engfred K, Kjaer M, Secher NH, Friedman DB, Hanel B, Nielsen OJ, et al. Hypoxia and training-induced adaptation of hormonal responses to exercise in humans. *European Journal of Applied Physiology and Occupational Physiology* 68: 303–309, 1994.
38. Faulkner JA, Kollias J, Favour CB, Buskirk ER, and Balke B. Maximum aerobic capacity and running performance at altitude. *Journal of Applied Physiology* 24: 685–691, 1968.
39. Ferguson M, Semmens E, Dumke C, Quindry J, and Ward T. Measured pulmonary and systemic markers of inflammation and oxidative stress following wildland firefighting simulations. *Journal of Environmental and Occupational Medicine* 58: 407–413, 2016.
40. Folinsbee L. Discussion: exercise and the environment. In *Exercise, Fitness, and Health*, edited by Bouchard C, Shephard R, Stevens T, Sutton J, and McPherson B. Champaign, IL: Human Kinetics, 1990, pp. 179–183.
41. Frisncho AR, Martinez C, Velasquez T, Sanchez J, and Montoye H. Influence of developmental adaptation on aerobic capacity at high altitude. *Journal of Applied Physiology* 34: 176–180, 1973.
42. Froese G and Burton AC. Heat losses from the human head. *Journal of Applied Physiology* 10: 235–241, 1957.
43. Gates D. *Man and His Environment: Climate*. New York,

- NY: Harper & Row, 1972.
44. Gilbert-Kawai ET, Milledge JS, Grocott MPW, and Martin DS. King of the mountains: Tibetan and Sherpa physiological adaptations for life at high altitude. *Physiology*. 29: 388–402, 2014.
45. Giles LV and Koehle MS. The health effects of exercising in air pollution. *Sports Medicine*. 44: 223–249, 2014.
46. Gilchrist J, Murphy M, Comstock RD, Collins C, McIlvain N, and Yard E. Heat illness among high school athletes—United States, 2005–2009. *Morbidity and Mortality Weekly Report* 59: 1009–1013, 2010.
47. Gisolfi CV and Cohen JS. Relationships among training, heat acclimation, and heat tolerance in men and women: the controversy revisited. *Medicine and Science in Sports* 11: 56–59, 1979.
48. Green HJ, Sutton JR, Cymerman A, Young PM, and Houston CS. Operation Everest II: adaptations in human skeletal muscle. *Journal of Applied Physiology* 66: 2454–2461, 1989.
49. Grover RF, Reeves JT, Grover EB, and Leathers JE. Muscular exercise in young men native to 3,100 m altitude. *Journal of Applied Physiology* 22: 555–564, 1967.
50. Guy JH, Deakin GB, Edwards AM, Miller CM, and Pyne DB. Adaptation to hot environmental conditions: an exploration of the performance basis, procedures and future directions to optimize opportunities for elite athletes. *Sports Medicine*. 45: 303–311, 2015.
51. Hanson PG and Zimmerman SW. Exertional heatstroke in novice runners. *JAMA* 242: 154–157, 1979.
52. Hardy J and Bard P. Body temperature regulation. In: *Medical Physiology*, edited by Mount-Castle V. St. Louis, MO: C. V. Mosby, 1974, pp. 1305–1342.
53. Hartley LH, Vogel JA, and Cruz JC. Reduction of maximal exercise heart rate at altitude and its reversal with atropine. *Journal of Applied Physiology* 36: 362–365, 1974.
54. Hayward MG, and Keatinge WR. Roles of subcutaneous fat and thermoregulatory reflexes in determining ability to stabilize body temperature in water. *Journal of Physiology* 320: 229–251, 1981.
55. Hirsch GL, Sue DY, Wasserman K, Robinson TE, and Hansen JE. Immediate effects of cigarette smoking on cardiorespiratory responses to exercise. *Journal of Applied Physiology* 58: 1975–1981, 1985.
56. Hobson RM, Clapp EL, Watson P, and Maughan RJ. Exercise capacity in the heat is greater in the morning than in the evening in man. *Medicine and Science in Sports and Exercise* 41: 174–180, 2009.
57. Holmer I. Physiology of swimming man. In: *Exercise and Sport Sciences Reviews*, edited by Hutton R, and Miller D. Salt Lake City, UT: Franklin Institute, 1979.
58. Hoppeler H, Kleinert E, Schlegel C, Claassen H, Howald H, Kayar SR, et al. Morphological adaptations of human skeletal muscle to chronic hypoxia. *International Journal of Sports Medicine* 11 (Suppl 1): S3–9, 1990.
59. Horvath SM. Exercise in a cold environment. In: *Exercise and Sport Sciences Reviews*, edited by Miller D. Salt Lake City, UT: Franklin Institute, 1981, pp. 221–263.
60. Horvath SM, Raven PB, Dahms TE, and Gray DJ. Maximal aerobic capacity at different levels of carboxyhemoglobin. *Journal of Applied Physiology* 38: 300–303, 1975.
61. Houmard JA, Costill DL, Davis JA, Mitchell JB, Pascoe DD, and Robergs RA. The influence of exercise intensity on heat acclimation in trained subjects. *Medicine and Science in Sports and Exercise* 22: 615–620, 1990.
62. Howald H, Pette D, Simoneau JA, Uber A, Hoppeler H, and Cerretelli P. Effect of chronic hypoxia on muscle enzyme activities. *International Journal of Sports Medicine* 11 (Suppl 1): S10–14, 1990.
63. Howley E. Effect of altitude on physical performance. In *Encyclopedia of Physical Education, Fitness, and Sports: Training, Environment, Nutrition, and Fitness*, edited by Stull G, and Cureton T. Salt Lake City, UT: Brighton, 1980, pp. 177–187.
64. Hubbard R, and Armstrong LE. Hyperthermia: new thoughts on an old problem. *Physician and Sportsmedicine* 17: 97–113, 1989.
65. Hughson RL, Green HJ, Houston ME, Thomson JA, MacLean DR, and Sutton JR. Heat injuries in Canadian mass participation runs. *Canadian Medical Association Journal* 122: 1141–1144, 1980.
66. Hurtado A. Animals in high altitudes: resident man. In: *Handbook of Physiology: Section 4—Adaptation to the Environment*, edited by Dill D. Washington, D.C.: American Physiological Society, 1964.
67. Kayser B. Nutrition and energetics of exercise at altitude. Theory and possible practical implications. *Sports Medicine* 17: 309–323, 1994.
68. Kollias J and Buskirk E. Exercise and altitude. In: *Science and Medicine of Exercise and Sport*, edited by Johnson W, and Buskirk E. New York, NY: Harper & Row, 1974.
69. Kollias J, Buskirk ER, Akers RF, Prokop EK, Baker PT, and Picon-Reategui E. Work capacity of long-time residents and newcomers to altitude. *Journal of Applied Physiology* 24: 792–799, 1968.
70. Lawler J, Powers SK, and Thompson D. Linear relationship between $\dot{V}O_2$ max and $\dot{V}O_2$ max decrement during exposure to acute hypoxia. *Journal of Applied Physiology* 64: 1486–1492, 1988.
71. Lorenzo S, Halliwill JR, Sawka MN, and Minson CT. Heat acclimation improves exercise performance. *Journal of Applied Physiology* 109: 1140–1147, 2010.
72. Lundby C, and Robach P. Does ‘altitude training’ increase exercise performance in elite athletes? *Experimental Physiology*. 101(7): 783–788, 2016.
73. Lundby C, Millet GP, Calbet JA, Bärtsch P, and Subudhi AW. Does ‘altitude training’ increase exercise performance in elite athletes? *British Journal of*

- Sports Medicine. 46: 792–795, 2012.
74. MacDougall JD, Green HJ, Sutton JR, Coates G, Cymerman A, Young P, et al. Operation Everest II: structural adaptations in skeletal muscle in response to extreme simulated altitude. *Acta Physiologica Scandinavica* 142: 421–427, 1991.
75. Marconi C, Marzorati M, Grassi B, Basnyat B, Colombini A, Kayser B, et al. Second generation Tibetan lowlanders acclimatize to high altitude more quickly than Caucasians. *Journal of Physiology* 556: 661–671, 2004.
76. Martin D and O’Kroy J. Effects of acute hypoxia on the $\dot{V}O_2$ max of trained and untrained subjects. *Journal of Sports Sciences* 11: 37–42, 1993.
77. Mathews DK, Fox EL, and Tanzi D. Physiological responses during exercise and recovery in a football uniform. *Journal of Applied Physiology* 26: 611–615, 1969.
78. Maughan RJ, Otani H, and Watson P. Influence of relative humidity on prolonged exercise capacity in a warm environment. *European Journal of Applied Physiology* 112: 2313–2321, 2012.
79. Mazess RB. Cardiorespiratory characteristics and adaptation to high altitudes. *American Journal of Physical Anthropology* 32: 267–278, 1970.
80. Mazess RB. Exercise performance at high altitude in Peru. *Federation Proceedings* 28: 1301–1306, 1969.
81. Mazess RB. Exercise performance of Indian and white high altitude residents. *Human Biology: An International Record of Research* 41: 494–518, 1969.
82. Mazzeo RS. Physiological responses to exercise at altitude—an update. *Sports Medicine* 38: 1–8, 2008.
83. McArdle WD, Magel JR, Gergley TJ, Spina RJ, and Toner MM. Thermal adjustment to cold-water exposure in resting men and women. *Journal of Applied Physiology* 56: 1565–1571, 1984.
84. McArdle WD, Magel JR, Spina RJ, Gergley TJ, and Toner MM. Thermal adjustment to cold-water exposure in exercising men and women. *Journal of Applied Physiology* 56: 1572–1577, 1984.
85. McGinnis G, Kliszczewicz B, Barberio M, Ballmann C, Peters B, et al. Acute hypoxia and exercise-induced oxidative stress. *International Journal of Sport Nutrition and Exercise Metabolism* 24: 684–693, 2014.
86. Norton E. *The Fight for Everest: 1924*. New York, NY: Longmans, Green, 1925.
87. Notley S, Flouris A, and Kenny G. On the use of wearable physiological monitors to assess heat strain during occupational heat stress. *Applied Physiology, Nutrition, and Metabolism* 43: 869–881, 2018.
88. Oelz O, Howald H, Di Prampero PE, Hoppeler H, Claassen H, Jenni R, et al. Physiological profile of world-class high-altitude climbers. *Journal of Applied Physiology* 60: 1734–1742, 1986.
89. Pascoe DD, Shanley LA, and Smith EW. Clothing and exercise. I: biophysics of heat transfer between the individual, clothing and environment. *Sports Medicine* 18: 38–54, 1994.
90. Peronnet F, Thibault G, and Cousineau DL. A theoretical analysis of the effect of altitude on running performance. *Journal of Applied Physiology* 70: 399–404, 1991.
91. Peters B, Ballmann C, McGinnis G, Epstein E, Hyatt H, Slivka D et. al. Graded hypoxia and blood oxidative stress during exercise recovery. *Journal of Sports Sciences* 34: 56–66, 2016.
92. Peters B, Ballmann C, Quindry T, Zehner E, McCroskey J, Ferguson M et. al. Experimental woodsmoke exposure during exercise and blood oxidative stress. *Journal of Occupational and Environmental Medicine* 60: 1073–1081, 2016.
93. Powers SK, Martin D, and Dodd S. Exercise-induced hypoxaemia in elite endurance athletes. Incidence, causes and impact on $\dot{V}O_2$ max. *Sports Medicine* 16: 14–22, 1993.
94. Pugh L. Athletes at altitude. *Journal of Physiology* 192: 619–646, 1967.
95. Pugh LG. Deaths from exposure on Four Inns Walking Competition, March 14–15, 1964. *Lancet* 1: 1210–1212, 1964.
96. Pugh LG and Edholm OG. The physiology of channel swimmers. *Lancet* 269: 761–768, 1955.
97. Pugh LG, Gill MB, Lahiri S, Milledge JS, Ward MP, and West JB. Muscular exercise at great altitudes. *Journal of Applied Physiology* 19: 431–440, 1964.
98. Quindry J, Dumke C, Slivka D, and Ruby B. Impact of extreme exercise at high altitude on oxidative stress in humans. *Journal of Physiology* 594: 5093–5104, 2016.
99. Quinn MD. The effects of wind and altitude in the 400-m sprint. *Journal of Sports Sciences* 22: 1073–1081, 2004.
100. Racinais S, Alonso J-M, Coutts AJ, Flouris AD, Girard O, González-Alonso J, et al. Consensus recommendations on training and competing in the heat. *Sports Medicine*. 45:925–938, 2015.
101. Racinais S. Different effects of heat exposure upon exercise performance in the morning and afternoon. *Scandinavian Journal of Medicine & Science in Sports* 20 Suppl. 3: 80–89, 2010.
102. Raven P. Effects of air pollution on physical performance. In: *Encyclopedia of Physical Education, Fitness, and Sports: Training, Environment, Nutrition, and Fitness*, edited by Stull G, and Cureton T. Salt Lake City, UT: Brighton, 1980, pp. 201–216.
103. Raven PB, Drinkwater BL, Ruhling RO, Bolduan N, Taguchi S, Gliner J, et al. Effect of carbon monoxide and peroxyacetyl nitrate on man’s maximal aerobic capacity. *Journal of Applied Physiology* 36: 288–293, 1974.
104. Roberts WO. Heat and cold: what does the environment do to marathon injury? *Sports Medicine* 37: 400–403, 2007.
105. Rose MS, Houston CS, Fulco CS, Coates G, Sutton JR, and Cymerman A. Operation Everest. II: Nutrition and body composition. *Journal of Applied Physiology*

- 65: 2545–2551, 1988.
106. Roskamm H, Landry F, Samek L, Schlager M, Weidemann H, and Reindell H. Effects of a standardized ergometer training program at three different altitudes. *Journal of Applied Physiology* 27: 840–847, 1969.
107. Rupert JL and Hochachka PW. Genetic approaches to understanding human adaptation to altitude in the Andes. *Journal of Experimental Biology* 204: 3151–3160, 2001.
108. Saltin B. Circulatory response to submaximal and maximal exercise after thermal dehydration. *Journal of Applied Physiology* 19: 1125–1132, 1964.
109. Saunders PU, Pyne DB, and Gore CJ. Endurance training at altitude. *High Altitude Medicine & Biology* 10: 135–148, 2009.
110. Sawka MN, Francesconi RP, Young AJ, and Pandolf KB. Influence of hydration level and body fluids on exercise performance in the heat. *JAMA* 252: 1165–1169, 1984.
111. Sawka MN, Young AJ, Francesconi RP, Muza SR, and Pandolf KB. Thermoregulatory and blood responses during exercise at graded hypohydration levels. *Journal of Applied Physiology* 59: 1394–1401, 1985.
112. Schoene RB, Lahiri S, Hackett PH, Peters RM, Jr., Milledge JS, Pizzo CJ, et al. Relationship of hypoxic ventilatory response to exercise performance on Mount Everest. *Journal of Applied Physiology* 56: 1478–1483, 1984.
113. Semenza GL. Hypoxia-inducible factors in physiology and medicine. *Cell* 148: 399–408, 2012.
114. Simonson TS, McClain DA, Jorde LB, and Prchal JT. Genetic determinants of Tibetan high-altitude adaptation. *Human Genetics* 131: 527–533, 2012.
115. Siple P and Passel C. Measurements of dry atmospheric cooling in subfreezing temperatures. *Proceedings of the American Philosophical Society* 89: 177–199, 1945.
116. Sperlich B, Born DP, Lefter MD, and Holmberg HC. Exercising in a hot environment: which t-shirt to wear? *Wilderness & Environmental Medicine* 24: 211–220, 2013.
117. Stachenfeld NS. Sodium ingestion, thirst, and drinking during endurance exercise. *Sports Science Exchange* 27(122): 1–5, 2014.
118. Strohl KP. Lessons in hypoxic adaptations from highaltitude populations. *Sleep Breath* 12: 115–121, 2008.
119. Sutton JR, Reeves JT, Wagner PD, Groves BM, Cymerman A, Malconian MK, et al. Operation Everest II: oxygen transport during exercise at extreme simulated altitude. *Journal of Applied Physiology* 64: 1309–1321, 1988.
120. Teunissen LPJ, de Haan A, de Koning JJ, and Daanen HAM. Effects of wind application on thermal perception and self-paced performance. *European Journal of Applied Physiology* 113: 1705–1717, 2013.
121. Tikuisis P, Bell DG, and Jacobs I. Shivering onset, metabolic response, and convective heat transfer during cold air exposure. *Journal of Applied Physiology* 70: 1996–2002, 1991.
122. Vogt M and Hoppeler H. Is hypoxia training good for muscles and exercise performance? *Progress in Cardiovascular Diseases* 52: 525–533, 2010.
123. Volpino P, Tomei F, La Valle C, Tomao E, Rosati MV, Ciarrocca M, et al. Respiratory and cardiovascular function at rest and during exercise testing in a healthy working population: effects of outdoor traffic air pollution. *Occupational Medicine* 54: 475–482, 2004.
124. Ward-Smith AJ. The influence of aerodynamic and biomechanical factors on long jump performance. *Journal of Biomechanics* 16: 655–658, 1983.
125. Ward-Smith AJ. Altitude and wind effects on long jump performance with particular reference to the world record by Bob Beamon. *Journal of Sport Sciences* 4: 89–99, 1986.
126. Wasse LK, Sunderland C, King JA, Batterham RL, and Stensel DJ. Influence of rest and exercise at a simulated altitude of 4,000 m on appetite, energy intake, and plasma concentrations of acylated ghrelin and peptide YY. *Journal of Applied Physiology* 112: 552–559, 2012.
127. Wegmann M, Faude O, Poppendieck W, Hecksteden A, Frohlich M, and Meyer T. Precooling and sports performance: a meta-analytical review. *Sports Medicine* Volume 42: 545–564, 2012.
128. West JB, Boyer SJ, Graber DJ, Hackett PH, Maret KH, Milledge JS, et al. Maximal exercise at extreme altitudes on Mount Everest. *Journal of Applied Physiology* 55: 688–698, 1983.
129. West JB, Hackett PH, Maret KH, Milledge JS, Peters RM, Jr., Pizzo CJ, et al. Pulmonary gas exchange on the summit of Mount Everest. *Journal of Applied Physiology* 55: 678–687, 1983.
130. West JB, Lahiri S, Gill MB, Milledge JS, Pugh LG, and Ward MP. Arterial oxygen saturation during exercise at high altitude. *Journal of Applied Physiology* 17: 617–621, 1962.
131. West JB, Lahiri S, Maret KH, Peters RM, Jr., and Pizzo CJ. Barometric pressures at extreme altitudes on Mt. Everest: physiological significance. *Journal of Applied Physiology* 54: 1188–1194, 1983.
132. West JB and Wagner PD. Predicted gas exchange on the summit of Mt. Everest. *Respiration Physiology* 42: 1–16, 1980.
133. Wilson MJ, Julian CG, and Roach RC. Genomic analysis of high-altitude adaptation: innovations and implications. *Current Sports Medicine Reports* 10: 59–61, 2011.
134. Wingo JE. Exercise intensity prescription during heat stress: a brief review. *Scandinavian Journal of Medicine and Science in Sports and Exercise* 25(Suppl 1): 90–95, 2015.
135. Wingo JE, Ganio MS, and Cureton KJ. Cardiovascular drift during heat stress: implications for exercise prescription. *Exercise and Sport Sciences Reviews*. 40:

88–94, 2012.

136. Wolski LA, McKenzie DC, and Wenger HA. Altitude training for improvements in sea level performance.

Is the scientific evidence of benefit? *Sports Medicine* 22: 251–263, 1996.

137. Yamane M, Oida Y, Ohnishi N, Matsumoto T, and Kitagawa K. Effects of wind and rain on thermal responses of humans in a mildly cold environment. *European Journal of Applied Physiology* 109: 117–123, 2010.

138. Yaspelkis BB, III, and Ivy JL. Effect of carbohydrate supplements and water on exercise metabolism in the heat. *Journal of Applied Physiology* 71: 680–687, 1991.

139. Yu IT, Wong TW, and Liu HJ. Impact of air pollution on cardiopulmonary fitness in schoolchildren. *Journal of Occupational and Environmental Medicine* 46: 946–952, 2004.

Chapter 24

1. Adams RP and Welch HG. Oxygen uptake, acid-base status, and performance with varied inspired oxygen fractions. *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology* 49: 863–868, 1980.

2. Alvares TS, Meirelles CM, Bhambhani YN, Paschoalin VMF, and Gomes PSC. L-arginine as a potential ergogenic aid in healthy subjects. *Sports Medicine* 41: 233–248, 2011.

3. American College of Sports Medicine. Nutrition and athletic performance. *Medicine and Science in Sports and Exercise* 48: 543–568, 2016.

4. Ariel G and Saville W. Anabolic steroids: the physiological effects of placebos. *Medicine and Science in Sports* 4: 124–126, 1972.

5. Ashenden MJ. A strategy to deter blood doping in sport. *Haematologica* 87: 225–232, 2002.

6. Barnard RJ, Gardner GW, Diaco NV, MacAlpin RN, and Kattus AA. Cardiovascular responses to sudden strenuous exercise—heart rate, blood pressure, and ECG. *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology* 34: 833–837, 1973.

7. Bassett D, Kyle C, Passfield L, Broker J, and Burke E. Comparing cycling world hour records, 1967–1996: modeling with empirical data. *Medicine & Science in Sports and Exercise* 31: 1665–1676, 1999.

8. Baume N, Hellems I, and Saugy M. Guide to over-the-counter sports supplements for athletes. *International Journal of Sports Medicine* 8: 2–10, 2007.

9. Baume N, Mahler N, Kamber M, Mangin P, and Saugy M. Research of stimulants and anabolic steroids in dietary supplements. *Scandinavian Journal of Medicine & Science in Sports* 16: 41–48, 2006.

10. Bell DG and McLellan TM. Exercise endurance 1, 3, and 6 h after caffeine ingestion in caffeine users and nonusers. *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology* 93: 1227–1234, 2002.

11. Bellinger PM. Beta-alanine supplementation for athletic

performance: an update. *Journal of Strength and Conditioning Research* 28: 1751–1770, 2014.

12. Berglund B, Birgegard G, and Hemmingsson P. Serum erythropoietin in cross-country skiers. *Medicine and Science in Sports and Exercise* 20: 208–209, 1988.

13. Berglund B, Ekblom B, Ekblom E, Berglund L, Kallner A, Reinebo P, et al. The Swedish Blood Pass project. *Scandinavian Journal of Medicine & Science in Sports* 17: 292–297, 2007.

14. Berglund B and Hemmingsson P. Effect of reinfusion of autologous blood on exercise performance in cross-country skiers. *International Journal of Sports Medicine* 8: 231–233, 1987.

15. Berry MJ, Stoneman JV, Weyrich AS, and Burney B. Dissociation of the ventilatory and lactate thresholds following caffeine ingestion. *Medicine and Science in Sports and Exercise* 23: 463–469, 1991.

16. Bishop D. Warm up I: potential mechanisms and the effects of passive warm up on exercise performance. *Sports Medicine* 33: 439–454, 2003.

17. Bishop D. Warm up II: performance changes following active warm up and how to structure the warm up. *Sports Medicine* 33: 483–498, 2003.

18. Bishop D, Edge J, Davis C, and Goodman C. Induced metabolic alkalosis affects muscle metabolism and repeated-sprint ability. *Medicine and Science in Sports and Exercise* 36: 807–813, 2004.

19. Brzezianska E, Domanska D, and Jegier A. Gene doping in sport—perspectives and risks. *Biology in Sport* 31: 251–259, 2014.

20. Buck CL, Wallman KE, Dawson B, and Guelfi KJ. Sodium phosphate as an ergogenic aid. *Sports Medicine* 43: 425–435, 2013.

21. Buckman JF, Farris SG, and Yusko DA. A national study of substance use behaviors among NCAA male athletes who use banned performance enhancing substances. *Drug and Alcohol Dependence* 131: 50–55, 2013.

22. Burke LM. Practical considerations for bicarbonate loading and sports performance. In: *Nutritional Coaching Strategy to Modulate Training Efficiency*. Nestlé Nutrition Institute Workshop Series 75: 15–26, 2013.

23. Carr AJ, Slater GJ, Gore CJ, Dawson B, and Burke LM. Effect of sodium bicarbonate on [HCO₃⁻], pH, and

gastrointestinal symptoms. *International Journal of Sport Nutrition and Exercise Metabolism* 21: 189–194, 2011.

24. Caruso J, Charles J, Unruh K, Giebel R, Learmonth L, and Potter W. Ergogenic effects of β-alanine and carnosine: proposed future research to quantify their efficacy. *Nutrients* 4: 585–601, 2012.

25. Chandler JV and Blair SN. The effect of amphetamines on selected physiological components related to athletic success. *Medicine and Science in Sports and Exercise* 12: 65–69, 1980.

26. Chapman C, Johnson B, Sackett J, Parker M, and Schlader Z. Soft drink consumption during and following exercise in the heat elevates biomarkers of acute kidney injury. *American Journal of Physiology—Regulatory, Integrative, and Comprehensive Physiology* 316: 189–198, 2019.

27. Chwalbinska-Moneta J, and Hanninen O. Effect of active warming-up on thermoregulatory, circulatory, and metabolic responses to incremental exercise in endurance-trained athletes. *International Journal of Sports Medicine* 10: 25–29, 1989.
28. Clarkson PM and Thompson HS. Drugs and sport. Research findings and limitations. *Sports Medicine* 24: 366–384, 1997.
29. Clements WT, Lee SR, and Bloomer RJ. Nitrate ingestion: a review of the health and performance effects. *Nutrients* 6: 5224–5264, 2014.
30. Collomp K, Le Panse B, Candau R, Lecoq AM, and De Ceaurriz J. Beta-2 agonists and exercise performance in humans. *Science & Sport* 25: 281–290, 2010.
31. Conlee R. Amphetamine, caffeine, and cocaine. In *Perspectives in Exercise Science and Sports Medicine, Vol 4: Ergogenics-Enhancement of Performance in Exercise and Sports*, edited by Lamb D, and Williams M. New York, NY: McGraw-Hill, 1991, pp. 285–330.
32. Costill DL, Dalsky GP, and Fink WJ. Effects of caffeine ingestion on metabolism and exercise performance. *Medicine and Science in Sports* 10: 155–158, 1978.
33. Cribb PJ, Williams AD, and Hayes A. A creatineprotein-carbohydrate supplement enhances responses to resistance training. *Medicine and Science in Sports and Exercise* 39: 1960–1968, 2007.
34. Criswell DS, Powers SK, and Herb RA. Clenbuterol-induced fiber type transition in the soleus of adult rats. *European Journal of Applied Physiology and Occupational Physiology* 74: 391–396, 1996.
35. De Hon O, Kuipers H, and van Bottenburg M. Prevalence of doping use in elite sports: a review of numbers and methods. *Sports Medicine* 45: 57–69, 2015.
36. De Hon O and Coumans B. The continuing story of nutritional supplements and doping infractions. *British Journal of Sports Medicine* 41: 800–805; discussion 805, 2007.
37. Demant TW and Rhodes EC. Effects of creatine supplementation on exercise performance. *Sports Medicine* 28: 49–60, 1999.
38. Dill D, Edwards H, and Talbot J. Alkalosis and the capacity for work. *Journal of Biological Chemistry* 97: LVII–LIX, 1932.
39. Dodd SL, Brooks E, Powers SK, and Tulley R. The effects of caffeine on graded exercise performance in caffeine naive versus habituated subjects. *European Journal of Applied Physiology and Occupational Physiology* 62: 424–429, 1991.
40. Doherty M and Smith PM. Effects of caffeine ingestion on rating of perceived exertion during and after exercise: a meta-analysis. *Scandinavian Journal of Medicine & Science in Sports* 15: 69–78, 2005.
41. Douroudos II, Fatouros IG, Gourgoulis V, Jamurtas AZ, Tsitsios T, Hatzinikolaou A, et al. Dose-related effects of prolonged NaHCO₃ ingestion during high intensity exercise. *Medicine and Science in Sports and Exercise* 38: 1746–1753, 2006.
42. Eckardt KU, Boutellier U, Kurtz A, Schopen M, Koller EA, and Bauer C. Rate of erythropoietin formation in humans in response to acute hypobaric hypoxia. *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology* 66: 1785–1788, 1989.
43. Eichner E. Blood doping results and consequences from the laboratory and the field. *Physician and Sportsmedicine* 15: 121–129, 1987.
44. Eichner E. The caffeine controversy: effects on endurance and cholesterol. *Physician and Sportsmedicine* 14: 124–132, 1986.
45. Ekblom B, Goldbarg AN, and Gullbring B. Response to exercise after blood loss and reinfusion. *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology* 33: 175–180, 1972.
46. Essig D, Costill D, and Van Handel P. Effect of caffeine ingestion on utilization of muscle glycogen and lipid during leg ergometer cycling. *International Journal of Sports Medicine* 1: 86–90, 1980.
47. Faria EW, Parker DL, and Faria IE. The science of cycling: factors affecting performance—part 2. *Sports Medicine* 35: 313–337, 2005.
48. Fiala KA, Casa DJ, and Roti MW. Rehydration with a caffeinated beverage during the nonexercise periods of 3 consecutive days of 2-a-day practices. *International Journal of Sport Nutrition and Exercise Metabolism* 14: 419–429, 2004.
49. Fitts RH and Holloszy JO. Lactate and contractile force in frog muscle during development of fatigue and recovery. *American Journal of Physiology* 231: 430–433, 1976.
50. Fragkaki AG, Georgakopoulos C, Sterk S, and Nielsen MWF. Spots doping: emerging designer and therapeutic β 2 agonists. *Clinica Chimica Acta* 427: 242–258, 2013.
51. Franks B. Physical warm-up. In: *Ergogenic Aids in Sport*, edited by Williams M. Champaign, IL: Human Kinetics, 1983, pp. 340–375.
52. Franks B. Physical warm-up. In: *Ergogenic Aids and Muscular Performance*, edited by Morgan W. New York, NY: Academic Press, 1972, pp. 160–191.
53. Fuchs F, Reddy Y, and Briggs FN. The interaction of cations with the calcium-binding site of troponin. *Biochimica et Biophysica Acta* 221: 407–409, 1970.
54. Ganio MS, Klau JF, Casa DJ, Armstrong LE, and Maresh CM. Effect of caffeine on sport-specific endurance-performance: a systematic review. *Journal of Strength and Conditioning Research* 23: 315–324, 2009.
55. Gatin P, Misner J, Boileau R, and Slaughter M. Failure of caffeine to enhance exercise performance in incremental treadmill running. *Australian Journal of Science and Medicine in Sport* 22: 23–27, 1990.
56. Gledhill N. Bicarbonate ingestion and anaerobic performance. *Sports Medicine* 1: 177–180, 1984.
57. Gledhill N. Blood doping and related issues: a brief review. *Medicine and Science in Sports and Exercise* 14: 183–189, 1982.
58. Gledhill N. The influence of altered blood volume and oxygen transport capacity on aerobic performance. *Exercise and Sport Sciences Reviews* 13: 75–93, 1985.
59. Gledhill N, Warburton D, and Jamnik V. Haemoglobin, blood volume, cardiac function, and aerobic

- power. *Canadian Journal of Applied Physiology = Revue Canadienne de Physiologie Appliquée* 24: 54–65, 1999.
60. Golding L. Drugs and hormones. In: *Ergogenic Aids and Muscular Performance*, edited by Morgan W. New York, NY: Academic Press, 1972.
61. Gotshalk LA, Volek JS, Staron RS, Denegar CR, Hagerman FC, and Kraemer WJ. Creatine supplementation improves muscular performance in older men. *Medicine and Science in Sports and Exercise* 34: 537–543, 2002.
62. Graham T and Spriet L. Caffeine and Exercise Performance. *Sports Science Exchange* #60, Vol. 9, Number 1, The Gatorade Sports Science Institute is located in Barrington, IL.
63. Graham TE and Spriet LL. Performance and metabolic responses to a high caffeine dose during prolonged exercise. *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology* 71: 2292–2298, 1991.
64. Heinonen OJ. Carnitine and physical exercise. *Sports Medicine* 22: 109–132, 1996.
65. Herda TJ, Beck TW, Ryan ED, Smith AE, Walter AA, Hartman MJ, et al. Effects of creatine monohydrate and polyethylene glycosylated creatine supplementation on muscular strength, endurance, and power output. *Journal of Strength and Conditioning Research* 23: 818–826, 2009.
66. Hetzler R. Effect of warm-up on plasma free fatty acid responses and substrate utilization during submaximal exercise. *Research Quarterly for Exercise and Sport* 57: 223–228, 1986.
67. Hobson RM, Saunders B, Ball G, Harris RC, and Sale C. Effects of β -alanine supplementation on exercise performance: a meta-analysis. *Amino Acids* 43: 25–37, 2012.
68. Hodgson AB, Randell RK, and Jeukendrup AE. The metabolic and performance effects of caffeine compared to coffee during endurance exercise. *PLOS ONE*. 8: e59561, 2013.
69. Hoffman JR, Emerson NS, and Stout JR. β -alanine supplementation. *Current Sports Medicine Reports* 11: 189–195, 2012.
70. Hogan MC, Cox RH, and Welch HG. Lactate accumulation during incremental exercise with varied inspired oxygen fractions. *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology* 55: 1134–1140, 1983.
71. Horswill CA. Effects of bicarbonate, citrate, and phosphate loading on performance. *International Journal of Sport Nutrition* 5 (Suppl): S111–119, 1995.
72. Ivy J. Amphetamines. In: *Ergogenic Aids in Sport*. Champaign, IL: Human Kinetics, 1983.
73. Ivy JL, Costill DL, Fink WJ, and Lower RW. Influence of caffeine and carbohydrate feedings on endurance performance. *Medicine and Science in Sports* 11: 6–11, 1979.
74. Jagim AR, Wright GA, Brice AG, and Doberstein ST. Effects of beta-alanine supplementation on sprint endurance. *Journal of Strength and Conditioning Research*. 27: 526–532, 2013.
75. Jones AM. Dietary nitrate supplementation and exercise performance. *Sports Medicine*. 44: S35–S45, 2014.
76. Jones AM, Koppo K, and Burnley M. Effects of prior exercise on metabolic and gas exchange responses to exercise. *Sports Medicine* 33: 949–971, 2003.
77. Juhn M. Popular sports supplements and ergogenic aids. *Sports Medicine* 33: 921–939, 2003.
78. Kley RA, Tarnopolsky MA, Vorgerd M. Creatine for treating muscle disorders. *Cochrane Database of Systematic Reviews* 2013, No.: CD004760. DOI: 10.1002/14651858.CD004760.pub4.
79. Kyle C. Mechanical factors affecting the speed of a cycle. In: *Science of Cycling*, edited by Burke ER. Champaign, IL: Human Kinetics, 1986 pp. 123–136.
80. Kyle C. Selecting cycling equipment. In: *High-Tech Cycling*, edited by Burke ER. Champaign, IL: Human Kinetics, 2003, pp. 1–48.
81. Kon M, Nakagaki K, and Ebi Y. Effects of all-out sprint interval training under hyperoxia on exercise performance. *Physiological Reports* 7: 1–10, 2019.
82. Law YLL, Ong WS, GillianYap TL, Lim SCJ, and Von Chia E. Effects of two and five days of creatine loading on muscular strength and anaerobic power in trained athletes. *Journal of Strength and Conditioning Research* 23: 906–914, 2009.
83. Linderman J and Fahey TD. Sodium bicarbonate ingestion and exercise performance: an update. *Sports Medicine* 11: 71–77, 1991.
84. Lippi G and Banfi G. Blood transfusions in athletes: old dogmas, new tricks. *Clinical Chemistry and Laboratory Medicine* 44: 1395–1402, 2006.
85. Lombardo J. Stimulants and athletic performance (part 1 of 2): amphetamines and caffeine. *Physician and Sportsmedicine* 14: 128–142, 1986.
86. Lundby C and Robach P. Assessment of total haemoglobin mass: can it detect erythropoietin-induced blood manipulations? *European Journal of Applied Physiology* 108: 197–200, 2010.
87. Lundby C, Robach P, and Saltin B. The evolving science of detection of ‘blood doping.’ *British Journal of Pharmacology* 165: 1306–1315, 2012.
88. Lundby C, Thomsen JJ, Boushel R, Koskolou M, Warberg J, Calbet JA, et al. Erythropoietin treatment elevates haemoglobin concentration by increasing red cell volume and depressing plasma volume. *Journal of Physiology* 578: 309–314, 2007.
89. Macdougall IC. Meeting the challenges of a new millennium: optimizing the use of recombinant human erythropoietin. *Nephrol Dial Transplant* 13 (Suppl 2): 23–27, 1998.
90. Maltin CA, and Delday MI. Satellite cells in innervated and denervated muscles treated with clenbuterol. *Muscle & Nerve* 15: 919–925, 1992.
91. Maughan RJ, King DS, and Lea T. Dietary supplements. *Journal of Sports Sciences* 22: 95–113, 2004.
92. McClung M and Collins D. “Because I know it will!”: placebo effects of an ergogenic aid on athletic performance. *Journal of Sport & Exercise Psychology* 29: 382–394, 2007.
93. McCole SD, Clancy K, Conte J-C, Anderson R, and Hagberg, JM. Energy expenditure during bicycling.

- Journal of Applied Physiology 68: 748–753, 1990.
94. McDowall JA. Supplement use by young athletes. *Journal of Sport Science & Medicine* 6: 337–342, 2007.
95. McDuff D, STull T, Castaldelli-Maia J, Hitchcock M, Hainline B, and Reardon C. Recreational and ergogenic substance use and substance use disorders in elite athletes: a narrative review. *British Journal of Sports Medicine* 53: 754–760, 2019.
96. McCrary JM, Ackermann BJ, and Halaki M. A systematic review of the effects of upper body warmup on performance. *British Journal of Sports Medicine*. 49: 935–942, 2015.
97. McLean C and Graham TE. Effects of exercise and thermal stress on caffeine pharmacokinetics in men and eumenorrheic women. *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology* 93: 1471–1478, 2002.
98. McNaughton L. Two levels of caffeine ingestion on blood lactate and free fatty acid responses during incremental exercise. *Research Quarterly for Exercise and Sport* 58: 255–259, 1987.
99. McNaughton LR. The influence of caffeine ingestion on incremental treadmill running. *British Journal of Sports Medicine* 20: 109–112, 1986.
100. Momaya A, Fawal M, and Estes R. Performance-enhancing substances in sports: a review of the literature. *Sports Medicine*. 45: 517–531, 2015.
101. Morente-Sánchez J and Zabala M. Doping in sport: a review of elite athletes' attitudes, beliefs, and knowledge. *Sports Medicine* 43: 395–411, 2013.
102. Morgan W. Basic considerations. In: *Ergogenic Aids and Muscular Performance*, edited by Morgan W. New York, NY: Academic Press, 1972.
103. Morkeberg J, Sharpe K, Belhage B, Damsgaard R, Schmidt W, Prommer N, et al. Detecting autologous blood transfusions: a comparison of three passport approaches and four blood markers. *Scandinavian Journal of Medicine & Science in Sports* 21: 235–243, 2011.
104. Morris A. Oxygen. In *Ergogenic Aids in Sports*. Champaign, IL: Human Kinetics, 1983.
105. Nakamaru Y and Schwartz A. The influence of hydrogen ion concentration on calcium binding and release by skeletal muscle sarcoplasmic reticulum. *Journal of General Physiology* 59: 22–32, 1972.
106. Nielsen HB, Bredmose PP, Stromstad M, Volianitis S, Quistorff B, and Secher NH. Bicarbonate attenuates arterial desaturation during maximal exercise in humans. *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology* 93: 724–731, 2002.
107. Nummela A, Hamalainen I, and Rusko H. Effect of hyperoxia on metabolic responses and recovery in intermittent exercise. *Scandinavian Journal of Medicine & Science in Sports* 12: 309–315, 2002.
108. Oopik V, Saarems I, Medijainen L, Karelon K, Janson T, and Timpmann S. Effects of sodium citrate ingestion before exercise on endurance performance in well trained college runners. *British Journal of Sports Medicine* 37: 485–489, 2003.
109. Outram S and Stewart B. Doping through supplement use: a review of the available evidence. *International Journal of Sport Nutrition and Exercise Metabolism*. 25: 54–59, 2015.
110. Perry CG, Talanian JL, Heigenhauser GJ, and Spriet LL. The effects of training in hyperoxia vs. normoxia on skeletal muscle enzyme activities and exercise performance. *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology* 102: 1022–1027, 2007.
111. Pluim BM, de Hon O, Staal JB, Limpens J, Kuipers H, Overbeek SE, et al. β 2-agonists and physical performance: a systematic review and meta analysis of randomized controlled studies. *Sports Medicine* 41: 39–57, 2011.
112. Pope HG, Wood RI, Rogol A, Nyberg F, Bowers L, and Bhasin S. Adverse health consequences of performance-enhancing drugs: an Endocrine Society Scientific Statement. *Endocrine Reviews* 35: 341–375, 2014.
113. Pottgiesser T, Ehteler T, Sottas P-E, Umhau M, and Schumacher YO. Hemoglobin mass and biological passport for detection of autologous blood doping. *Medicine and Science in Sports and Exercise* 44: 835–843, 2012.
114. Pottgiesser T, Umhau M, Ahlgrim C, Ruthardt S, Roecker K, and Schumacher YO. Hb mass measurement suitable to screen for illicit autologous blood transfusions. *Medicine and Science in Sports and Exercise* 39: 1748–1756, 2007.
115. Powers SK and Dodd S. Caffeine and endurance performance. *Sports Medicine* 2: 165–174, 1985.
116. Powers SK, Lawler J, Dempsey JA, Dodd S, and Landry G. Effects of incomplete pulmonary gas exchange on $\dot{V}O_2$ max. *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology* 66: 2491–2495, 1989.
117. Price M, Moss P, and Rance S. Effects of sodium bicarbonate ingestion on prolonged intermittent exercise. *Medicine and Science in Sports and Exercise* 35: 1303–1308, 2003.
118. Price MJ and Simons C. The effect of sodium bicarbonate ingestion on high-intensity intermittent running and subsequent performance. *Journal of Strength and Conditioning Research* 24: 1834–1842, 2010.
119. Putukian M, Kreher JB, Coppel DB, Glazer JL, McKeag DB, and White RD. Attention deficit hyperactivity disorder and the athlete: an American Medical Society for Sports Medicine position statement. *Clinical Journal of Sports Medicine* 21: 392–401, 2011.
120. Rawson E and Clarkson P. Scientifically debatable: is creatine worth its weight? *Sports Science Exchange* #91, Volume 16, Number 4, 2003 Gatorade Sports Science Institute, Barrington, IL.
121. Rawson E, Coni M, and Miles M. Creatine supplementation does not reduce muscle damage or enhance recovery from resistance exercise. *Journal of Strength and Conditioning Research* 21: 1208–1213, 2007.

122. Rawson E and Persky A. Mechanisms of muscular adaptations to creatine supplementation. *International Journal of Sports Medicine* 8: 43–53, 2007.
123. Rawson ES, Stec MJ, Frederickson SJ, and Miles MP. Low-dose creatine supplementation enhances fatigue resistance in the absence of weight gain. *Nutrition* 27: 451–455, 2011.
124. Requena B, Zabala M, and Padial P. Sodium bicarbonate and sodium citrate: ergogenic aids? *Journal of Strength and Conditioning Research* 19: 213–224, 2005.
125. Robbins MK, Gleeson K, and Zwillich CW. Effect of oxygen breathing following submaximal and maximal exercise on recovery and performance. *Medicine and Science in Sports and Exercise* 24: 720–725, 1992.
126. Robergs RA, Pascoe DD, Costill DL, Fink WJ, Chwalbinska-Moneta J, Davis JA, et al. Effects of warm-up on muscle glycogenolysis during intense exercise. *Medicine and Science in Sports and Exercise* 23: 37–43, 1991.
127. Rogers M, Bohlken R, and Beets M. Effects of creatine, ginseng, and astragalus supplementation on strength, body composition, mood, and blood lipids during strength-training in older adults. *Journal of Sports Science and Medicine* 5: 60–69, 2006.
128. Roy BD, Bosman MJ, and Tarnopolsky MA. An acute oral dose of caffeine does not alter glucose kinetics during prolonged dynamic exercise in trained endurance athletes. *European Journal of Applied Physiology* 85: 280–286, 2001.
129. Rozenek R, Fobel B, and Banks J. Does hyperbaric oxygen exposure affect high-intensity, short-duration exercise performance? *Journal of Strength and Conditioning Research* 21: 1037–1041, 2007.
130. Saunders B, Saito T, Klosterhoff, R, Faias de Oliveria L, Barreto G, Perim P et al. Open-placebo improves exercise performance in female cyclists. *Public Library of Science ONE* 14: 1–16, 2019.
131. Shao A and Hathcock JN. Risk assessment for creatine monohydrate. *Regul Toxicol Pharmacol* 45: 242–251, 2006.
132. Shrier I. Special communications: letters to the editor-in-chief. *Medicine and Science in Sports and Exercise* 36: 1832–1833, 2004.
133. Siegler JC, Marshall PWM, Bray J, and Towlson C. Sodium bicarbonate supplementation and ingestions timing: does it matter?. *Journal of Strength and Conditioning Research* 26: 1953–1958, 2012.
134. Siegler JC, Midgley AW, Polman RCJ, and Lever R. Effects of various sodium bicarbonate loading protocols on the time-dependent extracellular buffering profile. *Journal of Strength and Conditioning Research* 24: 2551–2557, p. 576 2010.
135. Simic L, Sarabon N, and Markovic G. Does preexercise static stretching inhibit maximal muscular performance? A meta-analytical review. *Scandinavian Journal of Medicine and Science in Sports* 23: 131–148, 2013.
136. Smith-Ryan AE, Fukuda DH, Stout JR, and Kendall KL. High-velocity intermittent running: effects of beta-alanine supplementation. *Journal of Strength and Conditioning Research* 26: 2798–2805, 2012.
137. Sottas P, Robinson N, Rabin O, and Saugy M. The athlete biological passport. *Clinical Chemistry* 57: 969–976, 2011.
138. Spriet LL. Exercise and sport performance with low doses of caffeine. *Sport Medicine* 44 (Suppl 2): S175–S184, 2014.
139. Spriet LL. Caffeine and performance. *International Journal of Sport Nutrition* 5 (Suppl): S84–99, 1995.
140. Stellingwerff T, Glazier L, Watt MJ, LeBlanc PJ, Heigenhauser GJ, and Spriet LL. Effects of hyperoxia on skeletal muscle carbohydrate metabolism during transient and steady-state exercise. *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology* 98: 250–256, 2005.
141. Tallis J, Duncan MJ, and James RS. What can isolated skeletal muscle experiments tell us about the effects of caffeine on exercise performance. *British Journal of Pharmacology*. 172: 3703–3713, 2015.
142. Tarnopolsky MA. Effect of caffeine on the neuromuscular system: potential as an ergogenic aid. *Applied Physiology, Nutrition and Metabolism* 33: 1284–1289, 2008.
143. Tarnopolsky MA, Atkinson SA, MacDougall JD, Sale DG, and Sutton JR. Physiological responses to caffeine during endurance running in habitual caffeine users. *Medicine and Science in Sports and Exercise* 21: 418–424, 1989.
144. Tesch P, Sjodin B, Thorstensson A, and Karlsson J. Muscle fatigue and its relation to lactate accumulation and LDH activity in man. *Acta Physiologica Scandinavica* 103: 413–420, 1978.
145. Thacker SB, Gilchrist J, Stroup DF, and Kimsey CD, Jr. The impact of stretching on sports injury risk: a systematic review of the literature. *Medicine and Science in Sports and Exercise* 36: 371–378, 2004.
146. Trexler ET, Smith-Ryan AE, Stout JR, Hoffman JR, Wilborn CD, Sale C, et al. International society of sports nutrition position stand: beta-alanine. *Journal of the International Society of Sports Nutrition*. 12: 30 DOI 10.1186, 2015.
147. Trivedi B, and Danforth WH. Effect of pH on the kinetics of frog muscle phosphofructokinase. *Journal of Biological Chemistry* 241: 4110–4112, 1966.
148. United States Anti-Doping Agency. Reasoned decision: United States Anti-Doping Agency vs. Lance Armstrong. <http://d3epuodzu3wuis.cloudfront.net/ReasonedDecision.pdf>, 2012.
149. Van Handel P. Caffeine. In *Ergogenic Aids in Sports*, edited by Williams M. Champaign, IL: Human Kinetics, 1983.
150. Van Thuyne W, and Delbeke FT. Distribution of caffeine levels in urine in different sports in relation to doping control before and after the removal of caffeine from the WADA doping list. *International Journal of Sports Medicine* 27: 745–750, 2006.
151. VanThuyne P, VanEenoo P, and Delbeke F. Nutritional supplements: prevalence of use and contamination with doping agents. *Nutrition Research Reviews* 19: 147–158, 2006.
152. Volek J. What we now know about creatine. *ACSM's Health & Fitness Journal* 3: 27–33, 1999.
153. Voss S, Thevis M, and Schinkothe T. Detection of homologous blood transfusion. *International Journal of*

- Sports Medicine 28: 633–637, 2007.
154. Warren GL, Park ND, Maresca RD, Mckibans KI, and Millard-Stafford ML. Effect of caffeine ingestion on muscular strength and endurance: a metaanalysis. *Medicine and Science in Sports and Exercise* 42: 1375–1387, 2010.
155. Welch H. Effects of hypoxia and hyperoxia on human performance. In: *Exercise and Sports Sciences Reviews*, edited by Pandolf K. New York, NY: Macmillan, 1987, pp. 191–222.
156. Welch HG, Bonde-Petersen F, Graham T, Klausen K, and Secher N. Effects of hyperoxia on leg blood flow and metabolism during exercise. *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology* 42: 385–390, 1977.
157. Weldon SM and Hill RH. The efficacy of stretching for prevention of exercise-related injury: a systematic review of the literature. *Manual Therapy* 8: 141–150, 2003.
158. Wilcox A. Bicarbonate Loading. *Gatorade Sports Science Institute*, Barrington, IL.
159. Wilcox A. Caffeine and Endurance Performance. *Gatorade Sports Science Institute*, 1990.
160. Wilcox A. Nutritional ergogenics and sport performance. In *The President's Council on Physical Fitness and Sports Research Digest*, edited by Corbin C, and Pangrazi B, Washington, D.C.: Department of Health and Human Services, 1998.
161. Williams MH, Anderson DE, and Rawson ES. *Nutrition for Health, Fitness & Sport*. New York, NY: McGraw-Hill, 2017.
162. Williams MH, Wesseldine S, Somma T, and Schuster R. The effect of induced erythrocythemia upon 5-mile treadmill run time. *Medicine and Science in Sports and Exercise* 13: 169–175, 1981.
163. Wilmore J. Oxygen. In *Ergogenic Aids and Muscular Performance*, edited by Morgan W. New York, NY: Academic Press, 1972, pp. 321–342.
164. Wilson GD and Welch HG. Effects of hyperoxic gas mixtures on exercise tolerance in man. *Medicine and Science in Sports* 7: 48–52, 1975.
165. Wilson GD, and Welch HG. Effects of varying concentrations of N₂/O₂ and He/O₂ on exercise tolerance in man. *Medicine and Science in Sports and Exercise* 12: 380–384, 1980.
166. Wilson GJ, Wilson JM, and Manninen AH. Effects of beta-hydroxy-beta-methylbutyrate (HMB) on exercise performance and body composition across levels of age, sex, and training experience: a review. *Nutrition & Metabolism* 5: Article No. 1, 2008.
167. Witvrouw E, Mahieu N, Danneels L, and McNair P. Stretching and injury prevention: an obscure relationship. *Sports Medicine* 34: 443–449, 2004.
168. World Anti-Doping Agency. *The 2013 Prohibited List: International Standard*. Switzerland: World Anti-Doping Agency, 2012.
169. World Anti-Doping Agency *Athlete biological passport operating guidelines 6th edition*. Switzerland: World Anti-Doping Agency, 2017.
170. Yang YT and McElligott MA. Multiple actions of beta-adrenergic agonists on skeletal muscle and adipose tissue. *Biochemical Journal* 261: 1–10, 1989.
171. Yeo SE, Jentjens RL, Wallis GA, and Jeukendrup AE. Caffeine increases exogenous carbohydrate oxidation during exercise. *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology* 99: 844–850, 2005.
172. Zanchi NE, Gerlinger-Romero F, Guimaraes-Ferreira L, de Siqueira MA, Felitti V, Lira FS, et al. HMB supplementation: clinical and athletic performance-related effects and mechanisms of action. *Amino Acids* 40: 1015–1025, 2011.
173. Zeno SA, Purvis D, Crawford C, Lee C, Lisman P, and Deuster PA. Warm-ups for military fitness testing: rapid evidence assessment of the literature. *Medicine and Science in Sports and Exercise* 45: 1369–1376, 2013.
174. Zhang Y, Coca A, Casa DJ, Antonio J, Green JM, and Bishop PA. Caffeine and diuresis during rest and exercise: a meta analysis. *Journal of Science and Medicine in Sport* 18: 659–574, 2015.