

References

- American College of Sports Medicine. (2018). ACSM's guidelines for exercise testing and prescription (10th ed.). Wolters Kluwer.
- Bailey, D. A., McKay, H. A., Mirwald, R. L., Crocker, P. R., & Faulkner, R. A. (1999). A six year longitudinal study of the relationship of physical activity to bone mineral accrual in growing children: The University of Saskatchewan bone mineral accrual study. *Journal of Bone and Mineral Research*, 14(10), 1672 to 1679.
- Behm, D. G., Blazevich, A. J., Kay, A. D., & McHugh, M. (2016). Acute effects of muscle stretching on physical performance, range of motion, and injury incidence in healthy active individuals: A systematic review. *Applied Physiology, Nutrition, and Metabolism*, 41(1), 1 to 11.
- Bodine, S. C. (2013). Disuse induced muscle wasting. *International Journal of Biochemistry and Cell Biology*, 45(10), 2200 to 2208.
- Booth, F. W., Roberts, C. K., Thyfault, J. P., Ruegsegger, G. N., & Toedebusch, R. G. (2017). Role of inactivity in chronic diseases: Evolutionary insight and pathophysiological mechanisms. *Physiological Reviews*, 97(4), 1351 to 1402.
- Bouchard, C., Rankinen, T., & Timmons, J. A. (2011). Genomics and genetics in the biology of adaptation to exercise. *Comprehensive Physiology*, 1(3), 1603 to 1648.
- Bredin, S. S., Gledhill, N., Jamnik, V. K., & Warburton, D. E. (2013). PAR Q+ and ePARmed X+: New risk stratification and physical activity clearance strategy. *Canadian Family Physician*, 59(3), 273 to 277.
- Bull, F. C., Al Ansari, S. S., Biddle, S., Borodulin, K., Buman, M. P., Cardon, G., Carty, C., Chaput, J. P., Chastin, S., Chou, R., Dempsey, P. C., DiPietro, L., Ekelund, U., Firth, J., Friedenreich, C. M., Garcia, L., Gichu, M., Jago, R., Katzmarzyk, P. T., ... Willumsen, J. F. (2020). World Health Organization 2020 guidelines on physical activity and sedentary behaviour. *British Journal of Sports Medicine*, 54(24), 1451 to 1462.
- Caspersen, C. J., Powell, K. E., & Christenson, G. M. (1985). Physical activity, exercise, and physical fitness: Definitions and distinctions for health related research. *Public Health Reports*, 100(2), 126 to 131.
- Colberg, S. R., Sigal, R. J., Yardley, J. E., Riddell, M. C., Dunstan, D. W., Dempsey, P. C., Horton, E. S., Castorino, K., & Tate, D. F. (2016) Physical activity / exercise and diabetes: A position statement of the American Diabetes Association. *Diabetes Care*, 39(11), 2065 to 2079.

- Cruz-Jentoft, A. J., Bahat, G., Bauer, J., Boirie, Y., Bruyère, O., Cederholm, T., Cooper, C., Landi, F., Rolland, Y., Sayer, A. A., Schneider, S. M., Sieber, C. C., Topinkova, E., Vandewoude, M., Visser, M., & Zamboni, M. (2019). Sarcopenia: Revised European consensus on definition and diagnosis. *Age and Ageing*, 48(1), 16 to 31.
- Damas, F., Libardi, C. A., & Ugrinowitsch, C. (2018). The development of skeletal muscle hypertrophy through resistance training: The role of muscle damage and muscle protein synthesis. *European Journal of Applied Physiology*, 118(3), 485 to 500.
- Dasso, N. A. (2019). How is exercise different from physical activity? A concept analysis. *Nursing Forum*, 54(1), 45 to 52.
- de Kam, D., Smulders, E., Weerdesteyn, V., & Smits-Engelsman, B. C. (2009). Exercise interventions to reduce fall related fractures and their risk factors in individuals with low bone density: A systematic review of randomized controlled trials. *Osteoporosis International*, 20(12), 2111 to 2125.
- Dinas, P. C., Koutedakis, Y., & Flouris, A. D. (2011). Effects of exercise and physical activity on depression. *Irish Journal of Medical Science*, 180(2), 319 to 325.
- Eime, R. M., Young, J. A., Harvey, J. T., Charity, M. J., & Payne, W. R. (2013). A systematic review of the psychological and social benefits of participation in sport for adults: Informing development of a conceptual model of health through sport. *International Journal of Behavioral Nutrition and Physical Activity*, 10, 135.
- Erickson, K. I., Voss, M. W., Prakash, R. S., Basak, C., Szabo, A., Chaddock, L., Kim, J. S., Heo, S., Alves, H., White, S. M., Wojcicki, T. R., Mailey, E., Vieira, V. J., Martin, S. A., Pence, B. D., Woods, J. A., McAuley, E., & Kramer, A. F. (2011). Exercise training increases size of hippocampus and improves memory. *Proceedings of the National Academy of Sciences*, 108(7), 3017 to 3022.
- Folland, J. P., & Williams, A. G. (2007). The adaptations to strength training: Morphological and neurological contributions to increased strength. *Sports Medicine*, 37(2), 145 to 168.
- Fragala, M. S., Cadore, E. L., Dorgo, S., Izquierdo, M., Kraemer, W. J., Peterson, M. D., & Ryan, E. D. (2019). Resistance training for older adults: Position statement from the National Strength and Conditioning Association. *Journal of Strength and Conditioning Research*, 33(8), 2019 to 2052.
- Franklin, B. A., Eijssvogels, T. M. H., Pandey, A., Quindry, J., & Toth, P. P. (2022). Physical activity, cardiorespiratory fitness, and cardiovascular health: A clinical practice statement of the ASPC Part I. *American Journal of Preventive Cardiology*, 12, 100424.

- Garatachea, N., Pareja-Galeano, H., Sanchis-Gomar, F., Santos-Lozano, A., Fiuza-Luces, C., Morán, M., Emanuele, E., Joyner, M. J., & Lucia, A. (2015). Exercise attenuates the major hallmarks of aging. *Rejuvenation Research*, 18(1), 57 to 89.
- Garber, C. E., Blissmer, B., Deschenes, M. R., Franklin, B. A., Lamonte, M. J., Lee, I. M., Nieman, D. C., & Swain, D. P. (2011). American College of Sports Medicine position stand: Quantity and quality of exercise for developing and maintaining cardiorespiratory, musculoskeletal, and neuromotor fitness in apparently healthy adults. *Medicine and Science in Sports and Exercise*, 43(7), 1334 to 1359.
- Green, D. J., Hopman, M. T., Padilla, J., Laughlin, M. H., & Thijssen, D. H. (2017). Vascular adaptation to exercise in humans: Role of hemodynamic stimuli. *Physiological Reviews*, 97(2), 495 to 528.
- Gronek, J., Boraczyński, M., Gronek, P., Wieliński, D., Tarnas, J., Marszałek, S., & Tang, Y. Y. (2021). Exercise in aging: Be balanced. *Aging and Disease*, 12(5), 1140 to 1149.
- Gunter, K. B., Almstedt, H. C., & Janz, K. F. (2012). Physical activity in childhood may be the key to optimizing lifespan skeletal health. *Exercise and Sport Sciences Reviews*, 40(1), 13 to 21.
- Hackney, A. C. (2020). Hormonal changes at rest in overreached endurance athletes: A new endocrine manifestation. *Journal of Endocrinological Investigation*, 43(11), 1629 to 1632.
- Hackney, A. C., & Lane, A. R. (2015). Exercise and the regulation of endocrine hormones. *Progress in Molecular Biology and Translational Science*, 135, 293 to 311.
- Hackney, A. C., & Walz, E. A. (2013). Hormonal adaptation and the stress of exercise training: The role of glucocorticoids. *Trends in Sport Sciences*, 20(4), 165 to 171.
- Hawley, J. A., Hargreaves, M., Joyner, M. J., & Zierath, J. R. (2014). Integrative biology of exercise. *Cell*, 159(4), 738 to 749.
- Hill, E. E., Zack, E., Battaglini, C., Viru, M., Viru, A., & Hackney, A. C. (2008). Exercise and circulating cortisol levels: The intensity threshold effect. *Journal of Endocrinological Investigation*, 31(7), 587 to 591.
- Hodson, N., West, D. W. D., Philp, A., Burd, N. A., & Moore, D. R. (2019). Molecular regulation of human skeletal muscle protein synthesis in response to exercise and nutrients: A compass for overcoming age related anabolic resistance. *American Journal of Physiology - Cell Physiology*, 317(6), C1061 to C1078.

- Hoier, B., & Hellsten, Y. (2014). Exercise induced capillary growth in human skeletal muscle and the dynamics of VEGF. *Microcirculation*, 21(4), 301 to 314.
- Holloszy, J. O., & Coyle, E. F. (1984). Adaptations of skeletal muscle to endurance exercise and their metabolic consequences. *Journal of Applied Physiology*, 56(4), 831 to 838.
- Hong, A. R., & Kim, S. W. (2018). Effects of resistance exercise on bone health. *Endocrinology and Metabolism*, 33(4), 435 to 444.
- Hossain, M. N., Lee, J., Choi, H., Kwak, Y. S., & Kim, J. (2024). The impact of exercise on depression: How moving makes your brain and body feel better. *Physical Activity and Nutrition*, 28(2), 43 to 51.
- Howe, T. E., Shea, B., Dawson, L. J., Downie, F., Murray, A., Ross, C., Harbour, R. T., Caldwell, L. M., & Creed, G. (2011). Exercise for preventing and treating osteoporosis in postmenopausal women. *Cochrane Database of Systematic Reviews*, 7, CD000333.
- Joyner, M. J., & Casey, D. P. (2015). Regulation of increased blood flow (hyperemia) to muscles during exercise: A hierarchy of competing physiological needs. *Physiological Reviews*, 95(2), 549 to 601.
- Kellmann, M., Bertollo, M., Bosquet, L., Brink, M., Coutts, A. J., Duffield, R., Erlacher, D., Halson, S. L., Hecksteden, A., Heidari, J., Kallus, K. W., Meeusen, R., Mujika, I., Robazza, C., Skorski, S., Venter, R., & Beckmann, J. (2018). Recovery and performance in sport: Consensus statement. *International Journal of Sports Physiology and Performance*, 13(2), 240 to 245.
- Kohrt, W. M., Bloomfield, S. A., Little, K. D., Nelson, M. E., & Yingling, V. R. (2004). American College of Sports Medicine position stand: Physical activity and bone health. *Medicine and Science in Sports and Exercise*, 36(11), 1985 to 1996.
- Kraemer, W. J., & Ratamess, N. A. (2004). Fundamentals of resistance training: Progression and exercise prescription. *Medicine and Science in Sports and Exercise*, 36(4), 674 to 688.
- Kraemer, W. J., & Ratamess, N. A. (2005). Hormonal responses and adaptations to resistance exercise and training. *Sports Medicine*, 35(4), 339 to 361.
- Kraemer, W. J., Ratamess, N. A., Hymer, W. C., Nindl, B. C., & Fragala, M. S. (2020). Growth hormone(s), testosterone, insulin like growth factors, and cortisol: Roles and integration for cellular development and growth with exercise. *Frontiers in Endocrinology*, 11, 33.
- Kredlow, M. A., Capozzoli, M. C., Hearon, B. A., Calkins, A. W., & Otto, M. W. (2015). The effects of physical activity on sleep: A meta analytic review. *Journal of Behavioral Medicine*, 38(3), 427 to 449.

- Lavie, C. J., Arena, R., Swift, D. L., Johannsen, N. M., Sui, X., Lee, D. C., Earnest, C. P., Church, T. S., O'Keefe, J. H., Milani, R. V., & Blair, S. N. (2015). Exercise and the cardiovascular system: Clinical science and cardiovascular outcomes. *Circulation Research*, 117(2), 207 to 219.
- Lieberman, D. E. (2015). Is exercise really medicine? An evolutionary perspective. *Current Sports Medicine Reports*, 14(4), 313 to 319.
- Lin, T. W., & Kuo, Y. M. (2013). Exercise benefits brain function: The monoamine connection. *Brain Sciences*, 3(1), 39 to 53.
- Malm, C., Jakobsson, J., & Isaksson, A. (2019). Physical activity and sports real health benefits: A review with insight into the public health of Sweden. *Sports*, 7(5), 127.
- Mandsager, K., Harb, S., Cremer, P., Phelan, D., Nissen, S. E., & Jaber, W. (2018). Association of cardiorespiratory fitness with long term mortality among adults undergoing exercise treadmill testing. *JAMA Network Open*, 1(6), e183605.
- Mann, S., Beedie, C., & Jimenez, A. (2014). Differential effects of aerobic exercise, resistance training and combined exercise modalities on cholesterol and the lipid profile: Review, synthesis and recommendations. *Sports Medicine*, 44(2), 211 to 221.
- Meeusen, R., Duclos, M., Foster, C., Fry, A., Gleeson, M., Nieman, D., Raglin, J., Rietjens, G., Steinacker, J., & Urhausen, A. (2013). Prevention, diagnosis and treatment of the overtraining syndrome: Joint consensus statement of the European College of Sport Science and the American College of Sports Medicine. *European Journal of Sport Science*, 13(1), 1 to 24.
- Morton, R. W., Murphy, K. T., McKellar, S. R., Schoenfeld, B. J., Henselmans, M., Helms, E., Aragon, A. A., Devries, M. C., Banfield, L., Krieger, J. W., & Phillips, S. M. (2018). A systematic review, meta analysis and meta regression of the effect of protein supplementation on resistance training induced gains in muscle mass and strength in healthy adults. *British Journal of Sports Medicine*, 52(6), 376 to 384.
- Mountjoy, M., Sundgot-Borgen, J. K., Burke, L. M., Ackerman, K. E., Blauwet, C., Constantini, N., Lebrun, C., Lundy, B., Melin, A. K., Meyer, N. L., Sherman, R. T., Tenforde, A. S., Torstveit, M. K., & Budgett, R. (2018). IOC consensus statement on relative energy deficiency in sport (RED S): 2018 update. *British Journal of Sports Medicine*, 52(11), 687 to 697.
- Nikander, R., Sievänen, H., Heinonen, A., Daly, R. M., Uusi-Rasi, K., & Kannus, P. (2010). Targeted exercise against osteoporosis: A systematic review and meta analysis for optimising bone strength throughout life. *BMC Medicine*, 8, 47.

- Northey, J. M., Cherbuin, N., Pampa, K. L., Smee, D. J., & Rattray, B. (2018). Exercise interventions for cognitive function in adults older than 50: A systematic review with meta analysis. *British Journal of Sports Medicine*, 52(3), 154 to 160.
- Nystoriak, M. A., & Bhatnagar, A. (2018). Cardiovascular effects and benefits of exercise. *Frontiers in Cardiovascular Medicine*, 5, 135.
- Pedersen, B. K., & Saltin, B. (2015). Exercise as medicine: Evidence for prescribing exercise as therapy in 26 different chronic diseases. *Scandinavian Journal of Medicine and Science in Sports*, 25(Suppl. 3), 1 to 72.
- Pescatello, L. S., Buchner, D. M., Jakicic, J. M., Powell, K. E., Kraus, W. E., Bloodgood, B., Campbell, W. W., Dietz, S., Dipietro, L., George, S. M., Macko, R. F., McTiernan, A., Pate, R. R., & Piercy, K. L. (2019). Physical activity to prevent and treat hypertension: A systematic review. *Medicine and Science in Sports and Exercise*, 51(6), 1314 to 1323.
- Peterson, M. D., Sen, A., & Gordon, P. M. (2011). Influence of resistance exercise on lean body mass in aging adults: A meta analysis. *Medicine and Science in Sports and Exercise*, 43(2), 249 to 258.
- Phillips, S. M. (2014). A brief review of critical processes in exercise induced muscular hypertrophy. *Sports Medicine*, 44(Suppl. 1), S71 to S77.
- Pinckard, K., Baskin, K. K., & Stanford, K. I. (2019). Effects of exercise to improve cardiovascular health. *Frontiers in Cardiovascular Medicine*, 6, 69.
- Priego-Quesada, J. I. (2021). Exercise biomechanics and physiology. *Life*, 11(2), 159.
- Robling, A. G., Castillo, A. B., & Turner, C. H. (2006). Biomechanical and molecular regulation of bone remodeling. *Annual Review of Biomedical Engineering*, 8, 455 to 498.
- Ross, R., Blair, S. N., Arena, R., Church, T. S., Després, J. P., Franklin, B. A., Haskell, W. L., Kaminsky, L. A., Levine, B. D., Lavie, C. J., Myers, J., Niebauer, J., Sallis, R., Sawada, S. S., Sui, X., & Wisløff, U. (2016). Importance of assessing cardiorespiratory fitness in clinical practice: A case for fitness as a clinical vital sign. *Circulation*, 134(24), e653 to e699.
- Ross, R., Goodpaster, B. H., Koch, L. G., Sarzynski, M. A., Kohrt, W. M., Johannsen, N. M., Skinner, J. S., Castro, A., Irving, B. A., Noland, R. C., Sparks, L. M., Spielmann, G., Day, A. G., Pitsch, W., Hopkins, W. G., & Bouchard, C. (2019). Precision exercise medicine: Understanding exercise response variability. *British Journal of Sports Medicine*, 53(18), 1141 to 1153.

- Russo, C. R. (2009). The effects of exercise on bone: Basic concepts and implications for the prevention of fractures. *Clinical Cases in Mineral and Bone Metabolism*, 6(3), 223 to 228.
- Schoenfeld, B. J. (2010). The mechanisms of muscle hypertrophy and their application to resistance training. *Journal of Strength and Conditioning Research*, 24(10), 2857 to 2872.
- Schoenfeld, B. J. (2016). Science and development of muscle hypertrophy. *Human Kinetics*.
- Schoenfeld, B. J., Grgic, J., Ogborn, D., & Krieger, J. W. (2017). Strength and hypertrophy adaptations between low versus high load resistance training: A systematic review and meta analysis. *Journal of Strength and Conditioning Research*, 31(12), 3508 to 3523.
- Schuch, F. B., Vancampfort, D., Richards, J., Rosenbaum, S., Ward, P. B., & Stubbs, B. (2016). Exercise as a treatment for depression: A meta analysis adjusting for publication bias. *Journal of Psychiatric Research*, 77, 42 to 51.
- Sherrington, C., Fairhall, N. J., Wallbank, G. K., Tiedemann, A., Michaleff, Z. A., Howard, K., Clemson, L., Hopewell, S., & Lamb, S. E. (2019). Exercise for preventing falls in older people living in the community. *Cochrane Database of Systematic Reviews*, 1, CD012424.
- Smith, J. A. B., Murach, K. A., Dyar, K. A., & Zierath, J. R. (2023). Exercise metabolism and adaptation in skeletal muscle. *Nature Reviews Molecular Cell Biology*, 24(9), 607 to 632.
- Stubbs, B., Vancampfort, D., Hallgren, M., Firth, J., Veronese, N., Solmi, M., Brand, S., Cordes, J., Malchow, B., Gerber, M., Schmitt, A., Correll, C. U., De Hert, M., Gaughran, F., Schneider, F., Kinnafick, F., Falkai, P., Möller, H. J., & Kahl, K. G. (2018). EPA guidance on physical activity as a treatment for severe mental illness: A meta review of the evidence. *European Psychiatry*, 54, 124 to 144.
- Stubbs, B., Vancampfort, D., Rosenbaum, S., Firth, J., Cosco, T., Veronese, N., Salum, G. A., & Schuch, F. B. (2017). An examination of the anxiolytic effects of exercise for people with anxiety and stress related disorders: A meta analysis. *Psychiatry Research*, 249, 102 to 108.
- Stults-Kolehmainen, M. A., & Sinha, R. (2014). The effects of stress on physical activity and exercise. *Sports Medicine*, 44(1), 81 to 121.
- Sylow, L., Kleinert, M., Richter, E. A., & Jensen, T. E. (2017). Exercise stimulated glucose uptake: Regulation and implications for glycaemic control. *Nature Reviews Endocrinology*, 13(3), 133 to 148. *Nature Reviews Endocrinology*, 13(3), 133 to 148.

- Szuhany, K. L., Bugatti, M., & Otto, M. W. (2015). A meta analytic review of the effects of exercise on brain derived neurotrophic factor. *Journal of Psychiatric Research*, 60, 56 to 64.
- Teixeira, P. J., Carraça, E. V., Markland, D., Silva, M. N., & Ryan, R. M. (2012). Exercise, physical activity, and self determination theory: A systematic review. *International Journal of Behavioral Nutrition and Physical Activity*, 9, 78.
- Turner, C. H. (1998). Three rules for bone adaptation to mechanical stimuli. *Bone*, 23(5), 399 to 407.
- Vingren, J. L., Kraemer, W. J., Ratamess, N. A., Anderson, J. M., Volek, J. S., & Maresh, C. M. (2010). Testosterone physiology in resistance exercise and training: The up stream regulatory elements. *Sports Medicine*, 40(12), 1037 to 1053.
- Warburton, D. E. R., & Bredin, S. S. D. (2017). Health benefits of physical activity: A systematic review of current systematic reviews. *Current Opinion in Cardiology*, 32(5), 541 to 556.
- Watson, S. L., Weeks, B. K., Weis, L. J., Harding, A. T., Horan, S. A., & Beck, B. R. (2018). High intensity resistance and impact training improves bone mineral density and physical function in postmenopausal women with osteopenia and osteoporosis: The LIFTMOR randomized controlled trial. *Journal of Bone and Mineral Research*, 33(2), 211 to 220.
- Wilkinson, S. B., Phillips, S. M., Atherton, P. J., Patel, R., Yarasheski, K. E., Tarnopolsky, M. A., & Rennie, M. J. (2008). Differential effects of resistance and endurance exercise in the fed state on signalling molecule phosphorylation and protein synthesis in human muscle. *Journal of Physiology*, 586(15), 3701 to 3717.
- Wolfe, R. R. (2006). The underappreciated role of muscle in health and disease. *American Journal of Clinical Nutrition*, 84(3), 475 to 482.
- Zouhal, H., Jacob, C., Delamarche, P., & Gratas-Delamarche, A. (2008). Catecholamines and the effects of exercise, training and gender. *Sports Medicine*, 38(5), 401 to 423.