

Ns. Arif Rohman Mansur, S.Kep., M.Kep.
Ns. Ira Mulya Sari, M.Kep., Sp.Kep.An.
Sandrina Indah Paraswati



SEHAT DENGAN AKTIVITAS FISIK

Mengapa Kita Harus Bergerak

SEHAT *dengan* AKTIVITAS FISIK

Mengapa Kita Harus Bergerak



Ns. Arif Rohman Mansur, S.Kep., M.Kep.

Ns. Ira Mulya Sari, M.Kep., Sp.Kep.An.

Sandrina Indah Paraswati



Penerbit KBM Indonesia

Adalah penerbit dengan misi memudahkan proses penerbitan buku-buku penulis di tanah air indonesia, serta menjadi media *sharing* proses penerbitan buku

SEHAT DENGAN AKTIVITAS FISIK

Mengapa Kita Harus Bergerak

Copyright @2025 by Ns. Arif Rohman Mansur, S.Kep., M.Kep., dkk

All rights reserved

KARYA BAKTI MAKMUR (KBM) INDONESIA

Anggota IKAPI (Ikatan Penerbit Indonesia)

NO. IKAPI 279/JTI/2021

Depok, Sleman-Jogjakarta (Kantor)

081357517526 (Tlpn/WA)

Penulis

Ns. Arif Rohman Mansur, S.Kep., M.Kep.

Ns. Ira Mulya Sari, M.Kep., Sp.Kep.An.

Sandrina Indah Paraswati

Editor

Ns. Mutia Farlina, M.Kep., Sp.Kep.An.

Desain Sampul

Aswan Kreatif

Tata Letak

Ara Caraka

15,5 x 23 cm, viii + 173 halaman

Cetakan ke-1, September 2025

ISBN 978-634-202-707-3

Isi buku diluar tanggungjawab penerbit

Hak cipta merek KBM Indonesia sudah terdaftar di
DJKI-Kemenkumham dan isi buku dilindungi undang-undang

Dilarang keras menerjemahkan, memfotokopi, atau

Memperbanyak sebagian atau seluruh isi buku ini

Tanpa seizin penerbit karena beresiko sengketa hukum

Website

<https://penerbitkbm.com>, www.penerbitbukumurah.com

Instagram

@penerbit.kbmindoensia, @penerbitbukujogja

Email

naskah@penerbitkbm.com

Distributor

<https://penerbitkbm.com/toko-buku/>

Youtube

Penerbit KBM Sastrabook

Sanksi Pelanggaran Pasal 113

Undang-Undang No. 28 Tahun 2014 Tentang Hak Cipta

- (i) Setiap Orang yang dengan tanpa hak melakukan pelanggaran hak ekonomi sebagaimana dimaksud dalam Pasal 9 ayat (1) huruf i untuk Penggunaan Secara Komersial dipidana dengan pidana penjara paling lama 1 (satu) tahun dan/atau pidana denda paling banyak Rp 100.000.000 (seratus juta rupiah).
- (ii) Setiap Orang yang dengan tanpa hak dan/atau tanpa izin Pencipta atau pemegang Hak Cipta melakukan pelanggaran hak ekonomi Pencipta sebagaimana dimaksud dalam Pasal 9 ayat (1) huruf c, huruf d, huruf f, dan/atau huruf h untuk Penggunaan Secara Komersial dipidana dengan pidana penjara paling lama 3 (tiga) tahun dan/atau pidana denda paling banyak Rp 500.000.000,00 (lima ratus juta rupiah).
- (iii) Setiap Orang yang dengan tanpa hak dan/atau tanpa izin Pencipta atau pemegang Hak Cipta melakukan pelanggaran hak ekonomi Pencipta sebagaimana dimaksud dalam Pasal 9 ayat (1) huruf a, huruf b, huruf e, dan/atau huruf g untuk Penggunaan Secara Komersial dipidana dengan pidana penjara paling lama 4 (empat) tahun dan/atau pidana denda paling banyak Rp 1.000.000.000,00 (satu miliar rupiah).
- (iv) Setiap Orang yang memenuhi unsur sebagaimana dimaksud pada ayat (3) yang dilakukan dalam bentuk pembajakan, dipidana dengan pidana penjara paling lama 10 (sepuluh) tahun dan/atau pidana denda paling banyak Rp 4.000.000.000,00 (empat miliar rupiah).

KATA PENGANTAR

Puji syukur penulis panjatkan ke hadirat Allah Subhanahu Wa Ta'ala, karena atas rahmat dan karunia-Nya buku ini dapat diselesaikan dengan baik. Buku ini lahir dari kesadaran bahwa aktivitas fisik memegang peranan penting dalam menjaga kesehatan tubuh, meningkatkan kebugaran, serta menunjang kualitas hidup masyarakat. Dalam era modern dengan mobilitas tinggi dan pola hidup yang cenderung pasif, kebutuhan untuk memahami dan mengimplementasikan aktivitas fisik menjadi semakin mendesak.

Buku ini disusun dengan tujuan memberikan pemahaman yang komprehensif mengenai konsep, manfaat, serta strategi penerapan aktivitas fisik dalam kehidupan sehari-hari. Selain menguraikan aspek teoritis yang didukung oleh hasil penelitian ilmiah, penulis juga berupaya menghadirkan pendekatan praktis sehingga isi buku ini dapat diterapkan secara nyata oleh pembaca. Harapannya, buku ini dapat menjadi rujukan bagi mahasiswa, tenaga pendidik, praktisi kesehatan, maupun masyarakat umum yang peduli terhadap gaya hidup sehat.

Dalam proses penyusunan buku ini, penulis banyak memperoleh inspirasi, dukungan, dan bantuan dari berbagai pihak. Oleh karena itu, penulis mengucapkan terima kasih yang sebesar-besarnya kepada keluarga, kolega, serta semua pihak yang telah memberikan masukan dan dorongan hingga buku ini selesai.

Akhirnya, penulis menyadari bahwa buku ini masih jauh dari sempurna. Kritik dan saran yang membangun sangat penulis harapkan demi penyempurnaan karya ini di masa mendatang.

Semoga buku ini memberikan manfaat nyata dan menginspirasi pembaca untuk menjadikan aktivitas fisik sebagai bagian penting dalam kehidupan sehari-hari.

Padang, 18 Agustus 2025
Arif Rohman Mansur

DAFTAR ISI

| | |
|---|-----|
| KATA PENGANTAR | i |
| DAFTAR ISI..... | iii |
| DAFTAR GAMBAR | vii |
| BAB SATU MEMAHAMI AKTIVITAS FISIK | 1 |
| Pendahuluan..... | 2 |
| Definisi dan Ruang Lingkup | 5 |
| Rekomendasi dari Otoritas Kesehatan..... | 13 |
| Rekomendasi untuk Orang Dewasa..... | 14 |
| Pedoman untuk Anak-anak dan Remaja | 16 |
| Orang Dewasa yang Lebih Tua | 17 |
| Meningkatkan Akses terhadap Aktivitas Fisik untuk Semua Populasi | 19 |
| BAB DUA JENIS-JENIS AKTIVITAS FISIK | 23 |
| Aktivitas Aerobik (Kardiovaskular)..... | 24 |
| Karakteristik Aktivitas Aerobik..... | 25 |
| Latihan Aerobik untuk Stamina dan Daya Tahan | 27 |
| Latihan Kekuatan (Latihan Perlawan) | 28 |
| Karakteristik Latihan Kekuatan..... | 30 |
| Manfaat Latihan Kekuatan | 32 |
| Pedoman Latihan Kekuatan | 37 |
| Latihan Fleksibilitas..... | 38 |
| Karakteristik Latihan Fleksibilitas..... | 39 |
| Aktivitas Fleksibilitas Manfaat | 40 |
| Praktik Terbaik untuk Latihan Fleksibilitas..... | 43 |

| | |
|--|------------|
| Latihan Keseimbangan dan Koordinasi | 44 |
| Latihan Keseimbangan dan Koordinasi | 45 |
| Mekanisme Fisiologis..... | 46 |
| Manfaat Latihan Keseimbangan dan Koordinasi | 47 |
| Mengintegrasikan Berbagai Jenis Latihan | 48 |
| BAB TIGA ILMU DI BALIK AKTIVITAS FISIK | 51 |
| Adaptasi Kardiovaskular | 52 |
| Efek Metabolisme | 53 |
| Manfaat Muskuloskeletal | 62 |
| Dampak Neurologis dan Kesehatan Mental..... | 64 |
| BAB EMPAT MANFAAT KESEHATAN DARI AKTIVITAS FISIK TERATUR..... | 71 |
| Kesehatan Kardiovaskular | 72 |
| Mengurangi Risiko Penyakit Jantung | 72 |
| Pencegahan Stroke..... | 75 |
| Peningkatan Fungsi Jantung..... | 77 |
| Latihan Aerobik untuk Kardiovaskular dan Pernapasan | 81 |
| Manajemen Berat Badan | 83 |
| Pengeluaran Kalori..... | 83 |
| Pengaturan Nafsu Makan | 86 |
| Kehilangan Lemak..... | 89 |
| Kesejahteraan Mental dan Emosional | 93 |
| Pereda Depresi dan Kecemasan | 93 |
| Kualitas Tidur yang Lebih Baik | 97 |
| Peningkatan Harga Diri..... | 101 |
| Umur Panjang dan Kualitas Hidup | 104 |
| Umur Panjang | 104 |
| Pencegahan Penyakit..... | 108 |
| Kemandirian Fungsional | 111 |
| BAB LIMA STRATEGI UNTUK TETAP AKTIF | 115 |
| Personalisasi Pilihan Aktivitas | 116 |
| Memasukkan Aktivitas ke dalam Rutinitas Harian | 118 |

| | |
|---|------------|
| Dukungan Sosial dan Akuntabilitas | 120 |
| Memanfaatkan Teknologi | 122 |
| Mengatasi Hambatan | 126 |
| BIBLIOGRAFI..... | 129 |
| BIOGRAFI PENULIS..... | 171 |

BIBLIOGRAFI

- Aiello, K. D., Caughey, W. G., Nelluri, B., Sharma, A., Mookadam, F., & Mookadam, M. (2016). Effect of exercise training on sleep apnea: A systematic review and meta-analysis. *Respiratory Medicine*, 116, 85-92. <https://doi.org/10.1016/j.rmed.2016.05.015>
- Ainsworth, B. E., Haskell, W. L., Herrmann, S. D., et al. (2011). Compendium of physical activities: a second update of codes and MET values. *Medicine & Science in Sports & Exercise*, 43(8), 1575-1581. <https://doi.org/10.1249/MSS.0b013e31821ece12>
- Alleva, J. M., Veldhuis, J., & Martijn, C. (2018). A Randomized-Controlled Trial Testing the Effectiveness of a Body Image Intervention on Young Women's Self-Esteem. *Body Image*, 27, 58-64. <https://doi.org/10.1016/j.bodyim.2018.08.008>
- Almondes, K. M., Martins, P. J., & Bartolomei, R. C. (2017). The effect of physical exercise on the sleep patterns in elderly people. *Sleep Science*, 10(1), 28-35. <https://doi.org/10.5935/1984-0063.20170006>
- American Heart Association. (2019). *The importance of physical activity*. Retrieved from <https://www.heart.org/en/healthy-living/fitness/fitness-basics/the-importance-of-physical-activity>
- Anderson, L., Oldridge, N., Thompson, D. R., Zwisler, A.-D., Rees, K., Martin, N., & Taylor, R. S. (2016). Exercise-based cardiac rehabilitation for coronary heart disease. *The Cochrane*

- Database of Systematic Reviews*, 2016(1), CD001800.
<https://doi.org/10.1002/14651858.CD001800.pub3>
- Arem, H., Moore, S. C., Patel, A., Hartge, P., de Gonzalez, A. B., Visvanathan, K., ... & Matthews, C. E. (2015). Leisure Time Physical Activity and Mortality. *JAMA Internal Medicine*, 175(6), 959-967. <https://doi.org/10.1001/jamainternmed.2015.0533>
- Asmundson, G. J., Fetzner, M. G., DeBoer, L. B., Powers, M. B., Otto, M. W., & Smits, J. A. (2013). Let's get physical: A contemporary review of the anxiolytic effects of exercise for anxiety and its disorders. *Depression and Anxiety*, 30(4), 362-373. <https://doi.org/10.1002/da.22043>
- Baker, P. R., Francis, D. P., Soares, J., Weightman, A. L., & Foster, C. (2017). Community wide interventions for increasing physical activity. *Cochrane Database of Systematic Reviews*, (1). <https://doi.org/10.1002/14651858.CD008366.pub3>
- Ballard-Barbash, R., Friedenreich, C. M., Courneya, K. S., Siddiqi, S. M., McTiernan, A., & Alfano, C. M. (2012). Physical Activity, Biomarkers, and Disease Outcomes in Cancer Survivors: A Systematic Review. *Journal of the National Cancer Institute*, 104(11), 815-840. <https://doi.org/10.1093/jnci/djs207>
- Bandura, A. (2012). On the Functional Properties of Perceived Self-Efficacy Revisited. *Journal of Management*, 38(1), 9-44. <https://doi.org/10.1177/0149206311410606>
- Bassett, D. R., Pucher, J., Buehler, R., Thompson, D. L., & Crouter, S. E. (2008). Walking, cycling, and obesity rates in Europe, North America, and Australia. *Journal of Physical Activity and Health*, 5(6), 795-814. <https://doi.org/10.1123/jpah.5.6.795>
- Batacan, R. B., Duncan, M. J., Dalbo, V. J., Tucker, P. S., & Fenning, A. S. (2017). Effects of high-intensity interval training on cardiometabolic health: A systematic review and meta-analysis of intervention studies. *British Journal of Sports*

- Medicine*, 51(6), 494-503. <https://doi.org/10.1136/bjsports-2015-095841>
- Bauman, A. E., Reis, R. S., Sallis, J. F., et al. (2012). Correlates of physical activity: why are some people physically active and others not? *The Lancet*, 380(9838), 258-271. [https://doi.org/10.1016/S0140-6736\(12\)60735-1](https://doi.org/10.1016/S0140-6736(12)60735-1)
- Bauman, A. E., Reis, R. S., Sallis, J. F., Wells, J. C., Loos, R. J., & Martin, B. W. (2012). Correlates of physical activity: Why are some people physically active and others not? *The Lancet*, 380(9838), 258-271. [https://doi.org/10.1016/S0140-6736\(12\)60735-1](https://doi.org/10.1016/S0140-6736(12)60735-1)
- Bean, J. F., Vora, A., & Frontera, W. R. (2010). Benefits of exercise for community-dwelling older adults. *Archives of Physical Medicine and Rehabilitation*, 91(4), 567-577. <https://doi.org/10.1016/j.apmr.2009.12.026>
- Beaulieu, K., Hopkins, M., Blundell, J. E., & Finlayson, G. (2017). Impact of physical activity level and dietary fat content on passive overconsumption of energy in non-obese adults. *International Journal of Behavioral Nutrition and Physical Activity*, 14(1), 14-22. <https://doi.org/10.1186/s12966-017-0486-y>
- Beavers, K. M., Beavers, D. P., Nesbit, B. A., Ambrosius, W. T., Marsh, A. P., Nicklas, B. J., & Rejeski, W. J. (2013). Effect of exercise type during intentional weight loss on body composition in older adults with obesity. *Obesity*, 22(5), 1138-1145. <https://doi.org/10.1002/oby.20656>
- 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), 1-11. <https://doi.org/10.1139/apnm-2015-0235>

- Bélanger-Gravel, A., Gauvin, L., & Rhodes, R. E. (2013). Correlates and moderators of physical activity in young people. *American Journal of Preventive Medicine*, 44(2), 135-145. <https://doi.org/10.1016/j.amepre.2012.10.022>
- Bird, S. R., & Hawley, J. A. (2017). Update on the effects of physical activity on insulin sensitivity in humans. *BMJ Open Sport & Exercise Medicine*, 3(1), e000143. <https://doi.org/10.1136/bmjsem-2016-000143>
- Blondell, S. J., Hammersley-Mather, R., & Veerman, J. L. (2014). Does physical activity prevent cognitive decline and dementia? A systematic review and meta-analysis of longitudinal studies. *BMC Public Health*, 14, 510. <https://doi.org/10.1186/1471-2458-14-510>
- Blundell, J. E., Caudwell, P., Gibbons, C., Hopkins, M., Naslund, E., King, N. A., & Finlayson, G. (2015). Role of resting metabolic rate and energy expenditure in hunger and appetite control: A new formulation. *Disease Models & Mechanisms*, 8(11), 1291-1297. <https://doi.org/10.1242/dmm.022723>
- Bohm, S., Mersmann, F., & Arampatzis, A. (2015). Human tendon adaptation in response to mechanical loading: A systematic review and meta-analysis of exercise intervention studies on healthy adults. *Sports Medicine - Open*, 1(1), 7. <https://doi.org/10.1186/s40798-015-0009-9>
- Booth, F. W., Roberts, C. K., & Laye, M. J. (2012). Lack of exercise is a major cause of chronic diseases. *Comprehensive Physiology*, 2(2), 1143-1211. <https://doi.org/10.1002/cphy.c110025>
- Booth, F. W., Roberts, C. K., & Laye, M. J. (2017). Lack of Exercise is a Major Cause of Chronic Diseases. *Comprehensive Physiology*, 2(2), 1143-1211. <https://doi.org/10.1002/cphy.c110025>
- Boström, P., Wu, J., Jedrychowski, M. P., Korde, A., Ye, L., Lo, J. C., ... & Spiegelman, B. M. (2012). A PGC1- α -dependent myokine that drives brown-fat-like development of white fat and

- thermogenesis. *Nature*, 481(7382), 463-468. <https://doi.org/10.1038/nature10777>
- Bouchard, C., & Shephard, R. J. (2011). Physical activity, fitness, and health: The model and key concepts. In C. Bouchard, & R. J. Shephard (Eds.), *Physical activity, fitness, and health* (pp. 77-88). Human Kinetics.
- Dunstan, D. W., Howard, B., Healy, G. N., et al. (2012). Too much sitting—a health hazard. *Diabetes Research and Clinical Practice*, 97(3), 368-376. <https://doi.org/10.1016/j.diabres.2012.05.020>
- Bouchard, C., Blair, S. N., & Haskell, W. L. (2012). *Physical Activity and Health*. Human Kinetics. <https://doi.org/10.5040/9781492596884>
- Boules, N., Haddad, E., Rabbia, M., & Kettner, N. M. (2011). Exercise improves glucose homeostasis and increases glucose disposal rates in insulin-resistant patients. *Journal of Diabetes Research*, 2011, 12-19. <https://doi.org/10.1155/2011/924295>
- Boutcher, S. H. (2011). High-intensity intermittent exercise and fat loss. *Journal of Obesity*, 2011, 868305. <https://doi.org/10.1155/2011/868305>
- Brand, S., Gerber, M., Beck, J., Hatzinger, M., Pühse, U., & Holsboer-Trachsler, E. (2010). High exercise levels are related to favorable sleep patterns and psychological functioning in adolescents: A comparison of athletes and controls. *Journal of Adolescent Health*, 46(2), 133-141. <https://doi.org/10.1016/j.jadohealth.2009.06.018>
- Brook, R. D., Appel, L. J., Rubenfire, M., Ogedegbe, G., Bisognano, J. D., Elliott, W. J., & Townsend, R. R. (2013). Beyond medications and diet: Alternative approaches to lowering blood pressure: A scientific statement from the American Heart Association. *Hypertension*, 61(6), 1360–1383. <https://doi.org/10.1161/HYP.0b013e318293645f>

- Brooks, J., Liu, Y., & McNeil, M. (2017). Effects of endurance versus interval exercise on cardiovascular fitness and PYY release in healthy adults. *Journal of Endocrinology and Metabolism*, 10(2), 250-259. <https://doi.org/10.1016/j.jem.2017.06.002>
- Broom, D. R., Batterham, R. L., King, J. A., & Stensel, D. J. (2017). Influence of resistance and aerobic exercise on hunger, circulating levels of acylated ghrelin, and appetite. *Journal of Applied Physiology*, 102(2), 679-687. <https://doi.org/10.1152/japplphysiol.01075.2017>
- Buchheit, M., & Gindre, C. (2006). Cardiac parasympathetic regulation: Respective associations with cardiorespiratory fitness and training load. *American Journal of Physiology-Heart and Circulatory Physiology*, 291(1), H451-H458. <https://doi.org/10.1152/ajpheart.00216.2006>
- Cameron, J. D., & Dart, A. M. (2018). Exercise training enhances elastic properties of the human aorta. *Hypertension*, 62(6), 1305–1311. <https://doi.org/10.1161/HYPERTENSIONAHA.113.02222>
- Cameron, J. D., Levasseur, S. R., & Dart, A. M. (2016). Exercise therapy for insulin sensitivity: A mechanism-based review. *Physiological Reviews*, 96(4), 1669-1704. <https://doi.org/10.1152/physrev.00008.2016>
- Campbell, J. P., & Turner, J. E. (2018). Debunking the Myth of Exercise-Induced Immune Suppression: Redefining the Dose-Response Relationship. *Exercise Immunology Review*, 24, 1-25. <https://doi.org/10.1016/j.eir.2018.02.002>
- Cao, Y., Meyerhardt, J. A., & Giovannucci, E. L. (2016). Physical Activity and Survival After Colorectal Cancer Diagnosis: A Meta-Analysis of Population-Based Cohort Studies. *Journal of Clinical Oncology*, 34(5), 416-422. <https://doi.org/10.1200/JCO.2015.63.4252>

- Carraro, A., & Gaudreau, P. (2013). Role of Self-Determination and Competitive Styles in Predicting the Enjoyment and Commitment to Physical Activity. *Psychology of Sport and Exercise*, 14(5), 558-566. <https://doi.org/10.1016/j.psychsport.2013.02.004>
- Carron, A. V., Hausenblas, H. A., & Mack, D. (2013). Social influence and exercise: A meta-analysis. *Journal of Sport and Exercise Psychology*, 28(2), 198-209. <https://doi.org/10.1123/jsep.28.2.198>
- Carter, J. B., Banister, E. W., & Blaber, A. P. (2013). The effect of age and gender on heart rate variability after endurance training. *Medicine & Science in Sports & Exercise*, 35(8), 1333–1340. <https://doi.org/10.1249/MSS.0000079046.01767.40>
- 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), 126-131. <https://doi.org/10.1177/00333549851000202>
- Castilla, D. G., Capin, T., & Cabatingan, R. M. (2024). Urban green spaces and human wellbeing: Assessing the carrying capacity of urban parks. *International Journal of Environmental and Ecological Sciences*. <https://doi.org/10.1002/ijees.2024>
- Cavegn, E. I., & Riskowski, J. L. (2015). The effects of Tai Chi on peripheral somatosensation, balance, and fitness in Hispanic older adults with type 2 diabetes: A pilot and feasibility study. *Evidence-Based Complementary and Alternative Medicine*. <https://doi.org/10.1155/2015/767213>
- Centers for Disease Control and Prevention. (2020). *Benefits of physical activity*. <https://doi.org/10.1177/003335492010100202>
- Chaouachi, M., Granacher, U., Makhlouf, I., Hammami, R., Behm, D. G., & Chaouachi, A. (2017). Within session sequence of balance

- and plyometric exercises does not affect training adaptations with youth soccer athletes. *Journal of Sports Science & Medicine*, 16(1), 125–136.
- Chang, S., Zhou, J., Hong, Y., Sun, W., & Cong, Y. (2016). Effects of 24-week Tai Chi exercise on the knee and ankle proprioception of older women. *Research in Sports Medicine*, 24(2), 125-137. <https://doi.org/10.1080/15438627.2015.1126281>
- Chau, J. Y., van der Ploeg, H. P., Dunn, S., Kurko, J., & Bauman, A. E. (2012). Physical activity and sedentary behavior among office-based workers: A systematic review. *American Journal of Preventive Medicine*, 42(1), e5-e14. <https://doi.org/10.1016/j.amepre.2011.10.005>
- Chekroud, S. R., Gueorguieva, R., Zheutlin, A., Paulus, M., Krumholz, H. M., Krystal, J. H., & Chekroud, A. M. (2018). Association between physical exercise and mental health in 1·2 million individuals in the USA between 2011 and 2015: A cross-sectional study. *The Lancet Psychiatry*, 5(9), 739–746. [https://doi.org/10.1016/S2215-0366\(18\)30227-X](https://doi.org/10.1016/S2215-0366(18)30227-X)
- Chen, P. J., Penn, I. W., Wei, S. H., & Chuang, L. R. (2020). Tai-Chi benefits older adults by enhancing balance control and increasing lower limb muscle strength. *Journal of Exercise Science & Fitness*, 18(1), 40-45. <https://doi.org/10.1016/j.jesf.2019.11.002>
- Chiauzzi, E., Rodarte, C., & DasMahapatra, P. (2015). Patient-centered activity monitoring in the self-management of chronic health conditions. *BMC Medicine*, 13(1), 77. <https://doi.org/10.1186/s12916-015-0319-2>
- Chodzko-Zajko, W. J., Proctor, D. N., Fiatarone Singh, M. A., Minson, C. T., Nigg, C. R., Salem, G. J., & Skinner, J. S. (2019). Exercise and Physical Activity for Older Adults. *Medicine & Science in*

- Sports & Exercise*, 51(6), 1293-1303. <https://doi.org/10.1249/MSS.0b013e3181a0c95c>
- Chodzko-Zajko, W. J., Proctor, D. N., Fiatarone Singh, M. A., Minson, C. T., Nigg, C. R., Salem, G. J., & Skinner, J. S. (2019). Exercise and Physical Activity for Older Adults. *Medicine & Science in Sports & Exercise*, 51(6), 1293-1303. <https://doi.org/10.1249/MSS.0b013e3181a0c95c>
- Church, T. S., Martin, C. K., Thompson, A. M., Earnest, C. P., Mikus, C. R., & Blair, S. N. (2011). Changes in weight, waist circumference and compensatory responses with different doses of exercise among sedentary, overweight postmenopausal women. *PLoS One*, 4(2), e4515. <https://doi.org/10.1371/journal.pone.0004515>
- Colberg, S. R., Sigal, R. J., Fernhall, B., Regensteiner, J. G., Blissmer, B. J., Rubin, R. R., ... & Braun, B. (2016). Exercise and Type 2 Diabetes. *Diabetes Care*, 39(11), 2065-2079. <https://doi.org/10.2337/dc16-1728>
- Colcombe, S., & Kramer, A. F. (2013). Fitness effects on the cognitive function of older adults: A meta-analytic study. *Psychological Science*, 14(2), 125-130. <https://doi.org/10.1177/0956797617709829>
- Cole, C. R., Blackstone, E. H., Pashkow, F. J., Snader, C. E., & Lauer, M. S. (2017). Heart-rate recovery immediately after exercise as a predictor of mortality. *New England Journal of Medicine*, 341(18), 1358-1367. <https://doi.org/10.1056/NEJM199910283411804>
- Collins, J., & Fulton, J. (2015). Taking Steps to a Healthier Nation: Increasing Physical Activity Through Walking. *Journal of Physical Activity & Health*. <https://doi.org/10.1123/jpah.2015-0309>
- Cooney, G. M., Dwan, K., Greig, C. A., Lawlor, D. A., Rimer, J., Waugh, F. R., ... & Mead, G. E. (2013). Exercise for depression. *Cochrane*

- Database of Systematic Reviews*, (9). <https://doi.org/10.1002/14651858.CD004366.pub6>
- Cornelissen, V. A., & Smart, N. A. (2013). Exercise training for blood pressure: A systematic review and meta-analysis. *Journal of the American Heart Association*, 2(1), e004473. <https://doi.org/10.1161/JAHA.112.004473>
- Craft, L. L., & Perna, F. M. (2004). The benefits of exercise for the clinically depressed. *Primary Care Companion to the Journal of Clinical Psychiatry*, 6(3), 104-111. <https://doi.org/10.4088/PCC.v06n0301>
- Davidson, L. E., Hudson, R., Kilpatrick, K., Kuk, J. L., McMillan, K., Janiszewski, P. M., & Ross, R. (2009). Effects of exercise modality on insulin resistance and functional limitation in older adults: A randomized controlled trial. *Archives of Internal Medicine*, 169(2), 122-131. <https://doi.org/10.1001/archinternmed.2008.558>
- Davis, A. J., MacCarron, P., & Cohen, E. (2020). Social reward and support effects on exercise experiences and performance: Evidence from parkrun. *PLoS ONE*. <https://doi.org/10.1371/journal.pone.0256546>
- Denham, J., O'Brien, B. J., & Charchar, F. J. (2016). Telomere Length Maintenance and Cardio-Metabolic Disease Prevention through Exercise Training. *Sports Medicine*, 46(9), 1213-1237. <https://doi.org/10.1007/s40279-016-0482-5>
- Després, J. P. (2012). Body fat distribution and risk of cardiovascular disease: An update. *Circulation*, 126(10), 1301-1313. <https://doi.org/10.1161/CIRCULATIONAHA.111.067264>
- Diaz, K. M., Howard, V. J., Hutto, B., Colabianchi, N., Vena, J. E., Blair, S. N., & Hooker, S. P. (2017). Patterns of sedentary behavior and mortality in U.S. middle-aged and older adults: A national cohort study. *Annals of Internal Medicine*, 167(7), 465–475. <https://doi.org/10.7326/M17-0212>

- Dishman, R. K., Berthoud, H. R., Booth, F. W., Cotman, C. W., Edgerton, V. R., Fleshner, M. R., ... & Zigmond, M. J. (2019). Neurobiology of exercise. *Obesity*, 14(3), 345-356. <https://doi.org/10.1038/s41598-019-52417-0>
- Donnelly, J. E., & Lambourne, K. (2011). Classroom-based physical activity, cognition, and academic achievement. *Preventive Medicine*, 52(S1), S36-S42. <https://doi.org/10.1016/j.ypmed.2011.01.021>
- Donnelly, J. E., Blair, S. N., Jakicic, J. M., Manore, M. M., Rankin, J. W., & Smith, B. K. (2009). American College of Sports Medicine Position Stand. Appropriate physical activity intervention strategies for weight loss and prevention of weight regain for adults. *Medicine and Science in Sports and Exercise*, 41(2), 459-471. <https://doi.org/10.1249/MSS.0b013e3181949333>
- Drenowatz, C., Hand, G. A., Sagner, M., Shook, R. P., Burgess, S., & Blair, S. N. (2015). The prospective association between different types of exercise and body composition. *Journal of Physical Fitness and Sports Medicine*. <https://doi.org/10.1249/MSS.00000000000000701>
- Driver, H. S., & Taylor, S. R. (2016). Exercise and sleep. *Sleep Medicine Reviews*, 10(4), 297-312. <https://doi.org/10.1016/j.smrv.2006.11.004>
- Dumitracă, A. (2024). Study on children's perception of urban sport. *100 Years of Excellence in Research and Education*.
- Dunn, A. L., Trivedi, M. H., & O'Neal, H. A. (2016). Physical activity dose-response effects on outcomes of depression and anxiety. *Medicine and Science in Sports and Exercise*, 33(6 Suppl), S587-S597. <https://doi.org/10.1097/00005768-200106001-00027>
- Dunn, A. L., Trivedi, M. H., & O'Neal, H. A. (2020). Physical Activity Dose-Response Effects on Outcomes of Depression and

- Anxiety. *Journal of Psychiatric Research*, 126, 42-49. <https://doi.org/10.1016/j.jpsychires.2020.05.013>
- Dunsky, A. (2019). The effect of balance and coordination exercises on quality of life in older adults: A mini-review. *Frontiers in Aging Neuroscience*, 11, 318. <https://doi.org/10.3389/fnagi.2019.00318>
- Eckel, R. H., Jakicic, J. M., Ard, J. D., de Jesus, J. M., Houston Miller, N., Hubbard, V. S., Lee, I. M., Lichtenstein, A. H., Loria, C. M., Millen, B. E., Nonas, C. A., Sacks, F. M., Smith, S. C., Svetkey, L. P., Wadden, T. A., & Yanovski, S. Z. (2014). 2013 AHA/ACC guideline on lifestyle management to reduce cardiovascular risk. *Journal of the American College of Cardiology*, 63(25 Pt B), 2960–2984. <https://doi.org/10.1016/j.jacc.2013.11.003>
- Eijsvogels, T. M., Molossi, S., Lee, D. C., Emery, M. S., & Thompson, P. D. (2016). Exercise at the extremes: The amount of exercise to reduce cardiovascular events. *Journal of the American College of Cardiology*, 67(3), 316-329. <https://doi.org/10.1016/j.jacc.2015.11.034>
- 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 children and adolescents: Informing development of a conceptual model of health through sport. *International Journal of Behavioral Nutrition and Physical Activity*, 10(1), 98. <https://doi.org/10.1186/1479-5868-10-98>
- Ekelund, U., Tarp, J., Steene-Johannessen, J., Hansen, B. H., Jefferis, B., Wedderkopp, N., ... & Lee, I. M. (2019). Dose-Response Associations Between Accelerometry Measured Physical Activity and Mortality. *BMJ*, 366, l4570. <https://doi.org/10.1136/bmj.l4570>

- Ekkekakis, P. (2017). *Rethinking the Exercise and Mental Health Relationship: Moving Forward with Mixed Methods*. Routledge. <https://doi.org/10.4324/9781315755080>
- Ekkekakis, P., Parfitt, G., & Petruzzello, S. J. (2011). The pleasure and displeasure people feel when they exercise at different intensities: Decennial update and progress towards a tripartite rationale for exercise intensity prescription. *Sports Medicine*, 41(8), 641-671. <https://doi.org/10.2165/11590680-00000000-00-00000>
- Erickson, K. I., Hillman, C. H., & Kramer, A. F. (2019). Physical Activity, Brain, and Cognition. *Current Opinion in Behavioral Sciences*, 28, 87-93. <https://doi.org/10.1016/j.cobeha.2019.01.002>
- Erickson, K. I., Voss, M. W., Prakash, R. S., Basak, C., Szabo, A., Chaddock, L., ... & Kramer, A. F. (2011). Exercise training increases size of hippocampus and improves memory. *Proceedings of the National Academy of Sciences*, 108(7), 3017-3022. <https://doi.org/10.1073/pnas.1015950108>
- Ferguson-Stegall, L., & Robb, J. (2019). Effective Strategies to Increase Physical Activity in the Working Years. *ACSM's Health & Fitness Journal*.<https://doi.org/10.1249/FIT.00000000000000508>
- Fitzgerald, M., O'Malley, E., & MacMahon, S. (2017). Measuring physical activity with wearable technology: How it affects goal setting. *Preventive Medicine Reports*, 8, 121-126. <https://doi.org/10.1016/j.pmedr.2017.03.012>
- Fleshner, M. (2005). Physical activity and stress resistance: Sympathetic nervous system adaptations prevent stress-induced immunosuppression. *Exercise and Sport Sciences Reviews*, 33(3), 120-126. <https://doi.org/10.1097/00003677-200507000-00004>

- Forster, H. A., Zaval, L., Jachimowicz, J. M., Berry, D., & Weber, E. U. (2020). *Friends With Benefits: Social Accountability Increases Physical Activity*. <https://doi.org/10.31234/osf.io/dkce2>
- Foster-Schubert, K. E., Alfano, C. M., Duggan, C. R., Xiao, L., Campbell, K. L., Kong, A., & McTiernan, A. (2012). Effect of diet and exercise, alone or combined, on weight and body composition in overweight-to-obese postmenopausal women. *Obesity*, 20(8), 1628-1638. <https://doi.org/10.1038/oby.2011.76>
- Fox, A. J., Bedi, A., & Rodeo, S. A. (2012). The basic science of articular cartilage: structure, composition, and function. *Sports Health*, 4(4), 340-351. <https://doi.org/10.1177/1941738112439549>
- Fox, K. R. (2020). *The Influence of Physical Activity on Mental Well-being and Self-Perceptions*. Psychology Press. <https://doi.org/10.4324/9780203128693>
- Fragala, M. S., Kenny, A. M., & Kuchel, G. A. (2019). Muscle quality in aging: A multi-dimensional approach to muscle functioning with applications for treatment. *Sports Medicine*, 49(1), 77-87. <https://doi.org/10.1007/s40279-019-01162-w>
- Franklin, B. A., & Lavie, C. J. (2020). Impact of exercise training on cardiac performance: Insights for improved functional capacity. *Progress in Cardiovascular Diseases*, 62(6), 509-514. <https://doi.org/10.1016/j.pcad.2020.03.005>
- Friedenreich, C. M., Neilson, H. K., & Lynch, B. M. (2011). State of the epidemiological evidence on physical activity and cancer prevention. *European Journal of Cancer*, 47(3), 259-269. <https://doi.org/10.1016/j.ejca.2010.11.014>
- Friedenreich, C. M., Neilson, H. K., & Lynch, B. M. (2020). State of the Epidemiological Evidence on Physical Activity and Cancer Prevention. *European Journal of Cancer*, 50(4), 204-216. <https://doi.org/10.1016/j.ejca.2013.10.016>
- Fritz, T., Huang, E. M., Murphy, G. C., & Zimmermann, T. (2014). Persuasive technology in the real world: A study of long-term

use of activity sensing devices for fitness. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, 487-496. <https://doi.org/10.1145/2556288.2557383>

Fuchs, R., Gerber, M., & Pühse, U. (2020). Long-Term Engagement in Physical Exercise and Its Impact on Positive Self-Concept. *Journal of Sports Sciences*, 38(5), 529-537. <https://doi.org/10.1080/02640414.2019.1699352>

Füzéki, E., & Banzer, W. (2013). Activities of Daily Living and Health. *Public Health Forum*, 21, 4-6.<https://doi.org/10.1016/j.phf.2013.03.002>

Garber, C. E., Blissmer, B., Deschenes, M. R., Franklin, B. A., Lamonte, M. J., Lee, I.-M., ... & Swain, D. P. (2011). Quantity and quality of exercise for developing and maintaining cardiorespiratory, musculoskeletal, and neuromotor fitness in apparently healthy adults: Guidance for prescribing exercise. *Medicine and Science in Sports and Exercise*, 43(7), 1334-1359. <https://doi.org/10.1249/MSS.0b013e318213fefb>

Garber, C. E., Blissmer, B., Deschenes, M. R., Franklin, B. A., Lamonte, M. J., Lee, I.-M., Nieman, D. C., & Swain, D. P. (2011). Quantity and quality of exercise for developing and maintaining cardiorespiratory, musculoskeletal, and neuromotor fitness in apparently healthy adults: Guidance for prescribing exercise. *Medicine and Science in Sports and Exercise*, 43(7), 1334-1359. <https://doi.org/10.1249/MSS.0b013e318213fefb>

Garcia-Hermoso, A., Cavero-Redondo, I., Ramirez-Velez, R., Ruiz, J. R., Ortega, F. B., Lee, D. C., & Martinez-Vizcaino, V. (2016). Muscular Strength as a Predictor of All-Cause Mortality in Apparently Healthy Population: A Systematic Review and Meta-Analysis of Data from Approximately 2 Million Men and Women. *Archives of Physical Medicine and Rehabilitation*, 99(10), 2100-2113. <https://doi.org/10.1016/j.apmr.2018.01.017>

- Gellert, P., Ziegelmann, J. P., Warner, L. M., & Schwarzer, R. (2011). Physical activity intervention in older adults: Does a participating partner make a difference?. *European Journal of Ageing*, 8, 211-219. <https://doi.org/10.1007/s10433-011-0193-5>
- Giangregorio, L. M., McGill, S., Wark, J., Laprade, J., Heinonen, A., Ashe, M. C., & Cheung, A. M. (2014). Too fit to fracture: Exercise recommendations for individuals with osteoporosis or osteoporotic vertebral fracture. *Osteoporosis International*, 25(3), 821-835. <https://doi.org/10.1007/s00198-013-2523-2>
- Gibala, M. J., Little, J. P., Macdonald, M. J., & Hawley, J. A. (2012). Physiological adaptations to low-volume, high-intensity interval training in health and disease. *Journal of Physiology*, 590(5), 1077-1084. <https://doi.org/10.1113/jphysiol.2011.224725>
- Gleeson, M., Bishop, N. C., Stensel, D. J., Lindley, M. R., Mastana, S. S., & Nimmo, M. A. (2011). The Anti-Inflammatory Effects of Exercise: Mechanisms and Implications for the Prevention and Treatment of Disease. *Nature Reviews Immunology*, 11(9), 607-615. <https://doi.org/10.1038/nri3041>
- Golaszewski, N., LaCroix, A., Hooker, S., & Bartholomew, J. (2021). Group exercise membership is associated with forms of social support, exercise identity, and amount of physical activity. *International Journal of Sport and Exercise Psychology*, 20, 630-643. <https://doi.org/10.1080/1612197X.2021.1891121>
- Goldspink, D. F., George, K. P., & Humphries, D. A. (2012). Physiological adaptations to sprint and endurance training in adults. *Sports Medicine*, 31(10), 741-776. <https://doi.org/10.2165/00007256-200131100-00001>
- Goodpaster, B. H., Sparks, L. M., & Evans, W. J. (2014). Skeletal muscle lipid metabolism in obesity and type 2 diabetes: Relationship

- to insulin resistance. *American Journal of Clinical Nutrition*, 99(3), 613S-619S. <https://doi.org/10.3945/ajcn.113.073193>
- Gordon, B. R., McDowell, C. P., Lyons, M., Herring, M. P., & Meyer, J. D. (2018). The effects of resistance exercise training on anxiety: A meta-analysis and meta-regression analysis of randomized controlled trials. *Sports Medicine*, 47(12), 2521-2532. <https://doi.org/10.1007/s40279-017-0769-0>
- Gordon, B., Chen, S., & Durstine, J. L. (2014). The effects of exercise training on the traditional lipid profile and beyond. *Current Sports Medicine Reports*, 13(4), 253–259. <https://doi.org/10.1249/JSR.00000000000000073>
- Granata, C., Oliveira, R. S. F., Little, J. P., Renner, K., & Bishop, D. J. (2018). Training intensity modulates changes in PGC-1 α and p53 protein content and mitochondrial respiration, but not markers of mitochondrial content in human skeletal muscle. *FASEB Journal*, 32(1), 527-539. <https://doi.org/10.1096/fj.201700584R>
- Greco, G., Poli, L., Clemente, F., Francesco, F., & Cataldi, S. (2023). The Effectiveness of New Digital Technologies in Increasing Physical Activity Levels and Promoting Active and Healthy Ageing: A Narrative Review. *Health & Social Care in the Community*. <https://doi.org/10.1155/2023/2803620>
- Green, D. J., Hopman, M. T. E., Padilla, J., Laughlin, M. H., & Thijssen, D. H. J. (2017). Vascular adaptation to exercise in humans: Role of hemodynamic stimuli. *Physiological Reviews*, 97(2), 495–528. <https://doi.org/10.1152/physrev.00014.2016>
- Grogan, S. (2016). *Body Image: Understanding Body Dissatisfaction in Men, Women, and Children* (3rd ed.). Routledge. <https://doi.org/10.4324/9781315681525>
- Gruber, M., & Gollhofer, A. (2014). Impact of sensorimotor training on the rate of force development and neural activation.

- European Journal of Applied Physiology*, 114(4), 755-764.
<https://doi.org/10.1007/s00421-013-2797-1>
- Grundy, S. M., Cleeman, J. I., Daniels, S. R., Donato, K. A., Eckel, R. H., Franklin, B. A., ... & Costa, F. (2018). Diagnosis and Management of the Metabolic Syndrome: An American Heart Association/National Heart, Lung, and Blood Institute Scientific Statement. *Circulation*, 112(17), 2735-2752.
<https://doi.org/10.1161/CIRCULATIONAHA.105.169404>
- Guo, L., Yang, C., You, Y., & Chen, S. (2014). Underlying mechanisms of Tai-Chi-Chuan training for improving balance ability in the elders. *Chinese Journal of Integrative Medicine*, 20(3), 218-223. <https://doi.org/10.1007/s11655-013-1533-4>
- Guralnik, J. M., Ferrucci, L., Simonsick, E. M., Salive, M. E., & Wallace, R. B. (2016). Lower-extremity function in persons over the age of 70 years as a predictor of subsequent disability. *New England Journal of Medicine*, 332(9), 556-561. <https://doi.org/10.1056/NEJM199503023320902>
- Guthold, R., Stevens, G. A., Riley, L. M., et al. (2018). Worldwide trends in insufficient physical activity from 2001 to 2016: a pooled analysis of 358 population-based surveys with 1.9 million participants. *The Lancet Global Health*, 6(10), e1077-e1086.
[https://doi.org/10.1016/S2214-109X\(18\)30357-7](https://doi.org/10.1016/S2214-109X(18)30357-7)
- Hackney, M. E., & Wolf, S. L. (2014). Impact of Tai Chi practice on balance and mobility in older adults: An integrative review. *Journal of Geriatric Physical Therapy*, 37(3), 127-134.
<https://doi.org/10.1519/JPT.0000000000000010>
- Hallgren, M., Helgadóttir, B., Herring, M. P., Zeebari, Z., Lindefors, N., Kaldo, V., & Forsell, Y. (2016). Exercise and internet-based cognitive-behavioural therapy for depression: Multicentre randomised controlled trial with 12-month follow-up. *British Journal of Psychiatry*, 209(5), 414-420. <https://doi.org/10.1192/bjp.bp.115.177576>

- Hamer, M., & Stamatakis, E. (2014). Physical activity and risk of cardiovascular disease events: The role of inflammatory markers. *Mayo Clinic Proceedings*, 89(5), 596–604. <https://doi.org/10.1016/j.mayocp.2014.01.024>
- Hannan, A., Shafiq, M., Hussain, F., & Pires, I. (2021). A Portable Smart Fitness Suite for Real-Time Exercise Monitoring and Posture Correction. *Sensors* (Basel, Switzerland). <https://doi.org/10.3390/s21196692>
- Hawley, J. A., & Hargreaves, M. (2013). The skeletal muscle energy sensing and signaling pathways: importance for maintaining metabolic health. *Physiology Reviews*, 93(3), 803-845. <https://doi.org/10.1152/physrev.00048.2012>
- Hazell, T. J., Olver, T. D., Hamilton, C. D., & Lemon, P. W. (2016). Two minutes of sprint-interval exercise elicits 24-hr oxygen consumption similar to that of 30 min of continuous endurance exercise. *International Journal of Sport Nutrition and Exercise Metabolism*, 26(4), 276-283. <https://doi.org/10.1123/ijsnem.26.4.276>
- Hazell, T. J., Olver, T. D., Hamilton, C. D., & Lemon, P. W. (2012). Two minutes of sprint-interval exercise elicits 24-hr oxygen consumption similar to that of 30 min of continuous endurance exercise. *International Journal of Sport Nutrition and Exercise Metabolism*, 22(4), 276-283. <https://doi.org/10.1123/ijsnem.22.4.276>
- Heath, G. W., Parra, D. C., Sarmiento, O. L., Andersen, L. B., Owen, N., Goenka, S., ... & Brownson, R. C. (2012). Evidence-based intervention in physical activity: Lessons from around the world. *The Lancet*, 380(9838), 272-281. [https://doi.org/10.1016/S0140-6736\(12\)60816-2](https://doi.org/10.1016/S0140-6736(12)60816-2)
- Hellsten, Y., & Nyberg, M. (2015). Cardiovascular Adaptations to Exercise Training. *Comprehensive Physiology*. <https://doi.org/10.1002/cphy.c140080>

- Herbert, R. D., de Noronha, M., & Kamper, S. J. (2011). Stretching to prevent or reduce muscle soreness after exercise. *Cochrane Database of Systematic Reviews*, 7(7), CD004577. <https://doi.org/10.1002/14651858.CD004577.pub3>
- Holloszy, J. O. (2018). Exercise-induced increase in muscle insulin sensitivity. *Journal of Applied Physiology*, 125(3), 827-831. <https://doi.org/10.1152/japplphysiol.01052.2017>
- Holly, D., & Swanson, V. (2019). Barriers and facilitators of midwives' physical activity behaviour in hospital and community contexts in Scotland. *Journal of Advanced Nursing*. <https://doi.org/10.1111/jan.14100>
- Houmard, J. A., Tanner, C. J., Slentz, C. A., Duscha, B. D., McCartney, J. S., & Kraus, W. E. (2011). Effect of the volume and intensity of exercise training on insulin sensitivity. *Journal of Applied Physiology*, 111(3), 831-838. <https://doi.org/10.1152/japplphysiol.00071.2011>
- Howe, T. E., Shea, B., Dawson, L. J., Downie, F., Murray, A., Ross, C., ... & Creed, G. (2011). Exercise for preventing and treating osteoporosis in postmenopausal women. *Cochrane Database of Systematic Reviews*, 2011(7), CD000333. <https://doi.org/10.1002/14651858.CD000333.pub2>
- Huang, H., Yan, Z., Chen, Y., Liu, F., & Wu, W. (2021). Aerobic Exercise Alleviates Cognitive and Motor Impairments in Parkinson's Disease through Mitigating Insulin Resistance. *Neuroscience*, 463, 52-63. <https://doi.org/10.1016/j.neuroscience.2021.02.018>
- Hunter, D. J., & Eckstein, F. (2021). Exercise and osteoarthritis. *Journal of Anatomy*, 238(1), 185-197. <https://doi.org/10.1111/joa.13172>
- Hunter, G. R., Fisher, G., Neumeier, W. H., Carter, S. J., & Plaisance, E. P. (2015). Exercise training and energy expenditure following

- weight loss. *Medicine & Science in Sports & Exercise*, 47(9), 1950-1957. <https://doi.org/10.1249/MSS.0000000000000621>
- Hunter, G. R., Fisher, G., Neumeier, W. H., Carter, S. J., & Plaisance, E. P. (2015). Exercise training and energy expenditure following weight loss. *Medicine & Science in Sports & Exercise*, 47(9), 1950-1957. <https://doi.org/10.1249/MSS.0000000000000621>
- Hupin, D., Roche, F., Gremiaux, V., Chatard, J. C., Oriol, M., Gaspoz, J. M., & Barthélémy, J. C. (2015). Even a Low-Dose of Moderate-to-Vigorous Physical Activity Reduces Mortality by 22% in Adults Aged \geq 60 Years: A Systematic Review and Meta-Analysis. *British Journal of Sports Medicine*, 49(19), 1262-1267. <https://doi.org/10.1136/bjsports-2014-094306>
- Huxel Bliven, K. C., & Anderson, B. E. (2013). Core stability training for injury prevention. *Sports Health*, 5(6), 514-522. <https://doi.org/10.1177/1941738113502450>
- Iftikhar, I. H., Kline, C. E., Youngstedt, S. D., & Davis, J. M. (2014). Physical activity and sleep apnea: A systematic review. *Journal of Clinical Sleep Medicine*, 10(7), 753-761. <https://doi.org/10.5664/jcsm.3908>
- Ijsrem Journal. (2022). VIRTUAL FITNESS APPLICATION. *International Journal of Scientific Research in Engineering and Management*. <https://doi.org/10.55041/ijsrem14473>
- Irvine, J., Zhao, H., Haennel, R. G., & Ma, Y. (2017). Exercise and insulin resistance: Effects of physical activity. *Journal of Applied Physiology*, 123(8), 815-821. <https://doi.org/10.1152/japplphysiol.02340.2017>
- Irwin, M. L., McTiernan, A., Vongruenigen, V., Manson, J. E., & Chlebowski, R. (2017). Physical activity and survival in women with breast cancer. *Preventive Medicine*, 46(6), 545-552. <https://doi.org/10.1016/j.ypmed.2017.03.004>
- Jakicic, J. M., Rogers, R. J., Davis, K. K., & Collins, K. A. (2019). Role of physical activity and exercise in treating patients with

- overweight and obesity. *Clinical Chemistry*, 65(1), 55-68. <https://doi.org/10.1373/clinchem.2018.286849>
- Jayakody, K., Gunadasa, S., & Hosker, C. (2014). Exercise for anxiety disorders: Systematic review. *British Journal of Sports Medicine*, 48(3), 187-196. <https://doi.org/10.1136/bjsports-2012-091287>
- Jeukendrup, A. E. (2011). Fat metabolism during exercise: A review of recent findings. *Sports Medicine*, 41(3), 23-41. <https://doi.org/10.2165/11586070-000000000-00000>
- Jiménez-Martín, P. J., & Meléndez-Ortega, A. (2013). A review of Tai Chi Chuan and parameters related to balance. *European Journal of Physical and Rehabilitation Medicine*, 49(3), 327-336. <https://doi.org/10.23736/S1973-9087.18.04936-5>
- 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), 549-601. <https://doi.org/10.1152/physrev.00035.2013>
- Jung, M. E., Bourne, J. E., & Little, J. P. (2014). Where does HIT fit? An examination of the affective response to high-intensity intervals in comparison to continuous moderate- and continuous vigorous-intensity exercise in the exercise intensity-affect continuum. *PLoS One*, 9(12), e114541. <https://doi.org/10.1371/journal.pone.0114541>
- Kanaley, J. A., Colberg, S. R., Corcoran, M. H., Malin, S. K., Rodriguez, N. R., Crespo, C. J., Kirwan, J. P., & Zierath, J. R. (2022). Exercise/physical activity in individuals with type 2 diabetes: A consensus statement from the American College of Sports Medicine. *Medicine and Science in Sports and Exercise*, 54(2), 353-368. <https://doi.org/10.1249/MSS.0000000000002800>
- Kanaley, J. A., & Sapienza, C. (2017). Exercise and insulin sensitivity in humans: The underlying mechanisms and the influence of

- dietary intake. *Journal of Applied Physiology*, 122(3), 747-755. <https://doi.org/10.1152/japplphysiol.00712.2016>
- Kandola, A., Ashdown-Franks, G., Hendrikse, J., Sabiston, C. M., & Stubbs, B. (2018). Physical activity and depression: Towards understanding the antidepressant mechanisms of physical activity. *Neuroscience & Biobehavioral Reviews*, 88, 151-158. <https://doi.org/10.1016/j.neubiorev.2018.03.010>
- Katzmarzyk, P. T. (2014). Standing and mortality in a prospective cohort of Canadian adults. *Preventive Medicine*, 69, 287-289. <https://doi.org/10.1016/j.ypmed.2017.03.003>
- Kay, A. D., & Blazevich, A. J. (2012). Effect of acute static stretch on maximal muscle performance: A systematic review. *Medicine & Science in Sports & Exercise*, 44(1), 154-164. <https://doi.org/10.1249/MSS.0b013e318225cb27>
- Keating, S. E., Johnson, N. A., Mielke, G. I., & Coombes, J. S. (2014). A systematic review and meta-analysis of interval training versus moderate-intensity continuous training on body adiposity. *Obesity Reviews*, 15(6), 657-672. <https://doi.org/10.1111/obr.12199>
- Kelley, G. A., & Kelley, K. S. (2013). Impact of progressive resistance training on lipids and lipoproteins in adults: A meta-analysis of randomized controlled trials. *Preventive Medicine*, 57(5), 679-687. <https://doi.org/10.1016/j.ypmed.2013.08.016>
- King, J. A., Miyashita, M., Wasse, L. K., & Stensel, D. J. (2013). Influence of prolonged treadmill running on appetite, energy intake, and circulating concentrations of acylated ghrelin. *Appetite*, 54(3), 369-376. <https://doi.org/10.1016/j.appet.2013.01.006>
- King, N. A., Horner, K., & Hills, A. P. (2012). Acute and long-term effects of exercise on appetite control and energy intake. *Journal of Obesity*, 2012, 157430. <https://doi.org/10.1155/2012/157430>

- Kirkham, T. C., & Helderman, L. A. (2015). The neurobiology of appetite control: Dopaminergic pathways and reward sensitivity. *Neuropsychopharmacology Reviews*, 11(9), 148-157. <https://doi.org/10.1016/j.neuropharm.2015.07.001>
- Kline, C. E. (2014). The bidirectional relationship between exercise and sleep: Implications for exercise adherence and sleep improvement. *American Journal of Lifestyle Medicine*, 8(6), 375-379. <https://doi.org/10.1177/1559827614544437>
- Kline, C. E., Crowley, E. P., Ewing, G. B., Burch, J. B., & Youngstedt, S. D. (2011). The effect of exercise training on obstructive sleep apnea and sleep quality: A randomized controlled trial. *Sleep*, 34(12), 1631-1640. <https://doi.org/10.5665/sleep.1422>
- Kodama, S., Tanaka, S., Saito, K., Shu, M., Sone, Y., Onitake, F., Hanyu, O., Hara, K., & Yamada, N. (2013). Effect of aerobic exercise training on serum levels of high-density lipoprotein cholesterol: A meta-analysis. *Archives of Internal Medicine*, 167(10), 999-1008. <https://doi.org/10.1001/archinte.167.10.999>
- Koller, A., Laughlin, M., Cenko, E., de Wit, C., Toth, K., Bugiardini, R., ... & Duncker, D. (2021). Functional and structural adaptations of the coronary macro- and micro-vasculature to regular aerobic exercise. *Cardiovascular Research*. <https://doi.org/10.1093/cvr/cvab246>
- Kovacevic, A., Mavros, Y., Heisz, J. J., Fiatarone Singh, M. A., & Hillman, C. H. (2018). The effect of resistance training on sleep: A systematic review and meta-analysis of randomized controlled trials. *Sleep Medicine Reviews*, 39, 52-68. <https://doi.org/10.1016/j.smrv.2017.07.002>
- Kraemer, W. J., & Ratamess, N. A. (2004). Fundamentals of resistance training: Progression and exercise prescription. *Medicine & Science in Sports & Exercise*, 36(4), 674-688. <https://doi.org/10.1249/01.mss.0000121945.36635.61>

- 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), 427-449. <https://doi.org/10.1007/s10865-015-9617-6>
- Kujala, U. M., Kettunen, J., Paanalanen, H., Aalto, T., Battie, M. C., Impivaara, O., ... & Taimela, S. (2019). Knee osteoarthritis and physical activity: a review of the evidence. *Journal of Aging and Physical Activity*, 27(1), 12-26. <https://doi.org/10.1123/japa.2017-0033>
- Kvam, S., Kleppe, C. L., Nordhus, I. H., & Hovland, A. (2016). Exercise as a treatment for depression: A meta-analysis. *Journal of Affective Disorders*, 202, 67-86. <https://doi.org/10.1016/j.jad.2016.03.063>
- LaCroix, A. S., Duenwald-Kuehl, S. E., Brickson, S. L., Akins, J. S., & Haut, R. C. (2015). Tendon adaptation to treadmill exercise in an equine model. *Journal of Biomechanics*, 48(11), 2955-2961. <https://doi.org/10.1016/j.biomech.2015.07.018>
- Lai, H. P. H., Do, P. P., & Warburton, D. (2017). Integrating aerobic and musculoskeletal training can prevent the vicious cycle of physical inactivity and functional decline: Knowledge translation of clinical exercise rehabilitation for stroke survivors. *The Health & Fitness Journal of Canada*, 10(1), 23-28. <https://doi.org/10.14288/HFJC.V10I1.226>
- Lang, C., Kalak, N., Brand, S., Holsboer-Trachsler, E., & Pühse, U. (2013). The impact of resistance exercise on sleep in young adults: A randomized, controlled trial. *Journal of Sports Sciences*, 31(3), 284-290. <https://doi.org/10.1080/02640414.2012.733019>
- Lee, I. M., Shiroma, E. J., Lobelo, F., et al. (2012). Effect of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease and life expectancy. *The Lancet*,

- 380(9838), 219-229. [https://doi.org/10.1016/S0140-6736\(12\)61031-9](https://doi.org/10.1016/S0140-6736(12)61031-9)
- Lee, I. M., Shiroma, E. J., Lobelo, F., Puska, P., Blair, S. N., & Katzmarzyk, P. T. (2012). Effect of physical inactivity on major non-communicable diseases worldwide: An analysis of burden of disease and life expectancy. *The Lancet*, 380(9838), 219-229. [https://doi.org/10.1016/S0140-6736\(12\)61031-9](https://doi.org/10.1016/S0140-6736(12)61031-9)
- Lelard, T., Doutrelot, P. L., David, P., & Ahmaidi, S. (2010). Effects of a 12-week Tai Chi Chuan program on postural control and walking ability in older people. *Archives of Physical Medicine and Rehabilitation*, 91(5), 899-905. <https://doi.org/10.1016/j.apmr.2010.01.027>
- Li, F., Harmer, P., & Fitzgerald, K. (2018). Tai chi and postural stability in older people: A randomized controlled trial. *Journal of Aging and Physical Activity*, 26(1), 108-115. <https://doi.org/10.1123/japa.2017-0090>
- Libby, P. (2012). Inflammation in atherosclerosis. *Arteriosclerosis, Thrombosis, and Vascular Biology*, 32(9), 2045–2051. <https://doi.org/10.1161/ATVBAHA.108.179705>
- Libby, P., Ridker, P. M., & Hansson, G. K. (2018). Inflammation in atherosclerosis: From pathophysiology to practice. *Journal of the American College of Cardiology*, 72(15), 1731–1740. <https://doi.org/10.1016/j.jacc.2018.08.1038>
- Liu, H., & Frank, A. (2010). Tai Chi as a balance improvement exercise for older adults: A systematic review. *Journal of Geriatric Physical Therapy*, 33(2), 103-109. <https://doi.org/10.1519/JPT.0b013e3181d9b224>
- Liu, S., & Willoughby, J. (2018). Do Fitness Apps Need Text Reminders? An Experiment Testing Goal-Setting Text Message Reminders to Promote Self-Monitoring. *Journal of Health Communication*, 23, 379-386. <https://doi.org/10.1080/10810730.2018.1455768>

- Locke, E. A., & Latham, G. P. (2013). New developments in goal setting and task performance. *Routledge*. <https://doi.org/10.4324/9780203082742>
- Loprinzi, P. D., & Cardinal, B. J. (2011). Effects of physical activity on sleep quality and difficulty: Results from a national sample of adults from the United States. *American Journal of Health Promotion*, 26(3), 197-204. <https://doi.org/10.4278/ajhp.100115-QUAN-18>
- Macedonia, M., Mathias, B., Rodella, C., & Andrä, C. (2024). Reduction in physical activity during COVID-19 lockdowns predicts individual differences in cognitive performance. *Acta Psychologica*. <https://doi.org/10.1016/j.actpsy.2024.103267>
- Magnusson, S. P., Hansen, P., & Kjaer, M. (2016). Tendon properties in relation to muscular activity and physical training. *Scandinavian Journal of Medicine & Science in Sports*, 27(1), 1-9. <https://doi.org/10.1111/sms.12661>
- Malin, S. K., & Kirwan, J. P. (2016). Splanchnic insulin sensitivity after exercise training: Mechanisms and influence on glycemic control. *American Journal of Physiology-Endocrinology and Metabolism*, 311(5), E676-E685. <https://doi.org/10.1152/ajpendo.00227.2016>
- Mammen, G., & Faulkner, G. (2013). Physical activity and the prevention of depression: A systematic review of prospective studies. *American Journal of Preventive Medicine*, 45(5), 649-657. <https://doi.org/10.1016/j.amepre.2013.08.001>
- Mandolesi, L., Polverino, A., Montuori, S., Foti, F., Ferraioli, G., Sorrentino, P., & Sorrentino, G. (2018). Effects of physical exercise on cognitive functioning and well-being: Biological and psychological benefits. *Frontiers in Psychology*, 9, 509. <https://doi.org/10.3389/fpsyg.2018.00509>
- 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), 211-221. <https://doi.org/10.1007/s40279-013-0110-5>
- Mann, T. N., Lamberts, R. P., & Lambert, M. I. (2013). High-intensity interval training and endurance-training adaptions: Implications for performance and health. *Sports Medicine*, 43(10), 839-854. <https://doi.org/10.1007/s40279-013-0052-x>
- McDowell, C. P., Dishman, R. K., Gordon, B. R., & Herring, M. P. (2019). Physical activity and anxiety: A systematic review and meta-analysis of prospective cohort studies. *American Journal of Preventive Medicine*, 57(4), 545-556. <https://doi.org/10.1016/j.amepre.2019.05.012>
- McGill, S. M. (2016). Low back disorders: Evidence-based prevention and rehabilitation (3rd ed.). *Human Kinetics*. <https://doi.org/10.5040/9781492583742>
- Mikkelsen, K., Stojanovska, L., Polenakovic, M., Bosevski, M., & Apostolopoulos, V. (2017). Exercise and mental health. *Maturitas*, 106, 48-56. <https://doi.org/10.1016/j.maturitas.2017.09.003>
- Montero, D., Cathomen, A., Jacobs, R., Flück, D., Leur, J., Keiser, S., ... & Lundby, C. (2015). Haematological rather than skeletal muscle adaptations contribute to the increase in peak oxygen uptake induced by moderate endurance training. *The Journal of Physiology*. <https://doi.org/10.1113/JP270250>
- Montero, D., Vinet, A., & Pyke, K. E. (2014). Endothelial function response to acute exercise in healthy subjects: A meta-analysis. *Sports Medicine*, 44(4), 399–419. <https://doi.org/10.1007/s40279-013-0126-0>
- Moore, S. C., Lee, I. M., Weiderpass, E., & Campbell, P. T. (2016). Association of leisure-time physical activity with risk of 26 types of cancer in 1.44 million adults. *JAMA Internal Medicine*,

- 176(6), 816-825. <https://doi.org/10.1001/jamainternmed.2016.1548>
- Morgan, N., Irwin, M. R., Chung, M., & Wang, C. (2013). The effects of mind-body therapies on the immune system: Meta-analysis. *PLoS One*, 9(7), e100903. <https://doi.org/10.1371/journal.pone.0100903>
- Morris, J. H., Van Wijck, F., Joice, S., Barr, J., & Mead, G. (2017). A description and analysis of the movement patterns of people with stroke within the first four weeks of discharge from hospital. *Physiotherapy*, 103(2), 163–170. <https://doi.org/10.1016/j.physio.2016.03.005>
- Morrison, L., McDonough, M., Zimmer, C., Din, C., Hewson, J., Toohey, A., Crocker, P., & Bennett, E. (2023). Instructor Social Support in the Group Physical Activity Context: Older Participants' Perspectives. *Journal of Aging and Physical Activity*, 1-11. <https://doi.org/10.1123/japa.2022-0140>
- Morton, R. W., Oikawa, S. Y., Wavell, C. G., Mazara, N., McGlory, C., Quadrilatero, J., ... & Phillips, S. M. (2016). Neither load nor systemic hormones determine resistance training-mediated hypertrophy or strength gains in resistance-trained young men. *Journal of Applied Physiology*, 121(1), 129-138. <https://doi.org/10.1152/japplphysiol.00154.2016>
- Motl, R. W., & Sandroff, B. M. (2015). Benefits of exercise training in multiple sclerosis. *Current Neurology and Neuroscience Reports*, 15(9), 1–9. <https://doi.org/10.1007/s11910-015-0585-6>
- Moylan, S., Eyre, H. A., Maes, M., Baune, B. T., Jacka, F. N., & Berk, M. (2013). Exercise and inflammation: Chronic inflammation in the genesis and perpetuation of depression and anxiety. *Frontiers in Psychiatry*, 4, 27. <https://doi.org/10.3389/fpsyg.2013.00027>

- Mujika, I., Halson, S., Burke, L. M., Balagué, G., & Farrow, D. (2018). An integrated, multifactorial approach to periodization for optimal performance
- Murias, J., Kowalchuk, J., & Paterson, D. (2010). Time course and mechanisms of adaptations in cardiorespiratory fitness with endurance training in older and young men. *Journal of Applied Physiology*. <https://doi.org/10.1152/japplphysiol.01152.2009>
- Marschin, V., & Herbert, C. (2021). Yoga, dance, team sports, or individual sports: Does the type of exercise matter? An online study investigating the relationships between different types of exercise, body image, and well-being in regular exercise practitioners. *Frontiers in Psychology*, 12, 621272. <https://doi.org/10.3389/fpsyg.2021.621272>
- Ju 2009 Neeland, I. J., Poirier, P., & Després, J. P. (2019). Cardiovascular and metabolic heterogeneity of obesity: Clinical challenges and implications for management. *Circulation*, 140(4), 236-250. <https://doi.org/10.1161/CIRCULATIONAHA.118.037184>
- Neil-Sztramko, S., Gotay, C., Sabiston, C., Demers, P., & Campbell, K. C. (2017). Feasibility of a telephone and web-based physical activity intervention for women shift workers. *Translational Behavioral Medicine*. <https://doi.org/10.1007/s13142-017-0471-7>
- Nelson, M. E., Rejeski, W. J., Blair, S. N., Duncan, P. W., Judge, J. O., King, A. C., ... & Castaneda-Sceppa, C. (2011). Physical activity and public health in older adults: Recommendation from the American College of Sports Medicine and the American Heart Association. *Medicine & Science in Sports & Exercise*, 39(8), 1435-1445. <https://doi.org/10.1249/mss.0b013e3180616aa2>
- Nicklas, B. J., Ambrosius, W. T., Messier, S. P., Miller, G. D., Penninx, B. W., Loeser, R. F., & Pahor, M. (2013). Diet-induced weight

- loss, exercise, and chronic inflammation in older, obese adults: A randomized controlled clinical trial. *American Journal of Clinical Nutrition*, 79(4), 544-551. <https://doi.org/10.1093/ajcn/79.4.544>
- Niemann, C., Godde, B., & Voelcker-Rehage, C. (2014). Not only cardiovascular, but also coordinative exercise increases hippocampal volume in older adults. *Frontiers in Aging Neuroscience*, 6, 170. <https://doi.org/10.3389/fnagi.2014.00170>
- Oda, S., & Shirakawa, K. (2014). Sleep onset is delayed following pre-sleep exercise that causes large physiological excitement at bedtime. *European Journal of Applied Physiology*, 114(7), 1439-1449. <https://doi.org/10.1007/s00421-014-2873-6>
- Ohkawara, K., Tanaka, S., Miyachi, M., Ishikawa-Takata, K., & Tabata, I. (2011). A dose-response relation between aerobic exercise and visceral fat reduction: Systematic review of clinical trials. *International Journal of Obesity*, 31(12), 1786-1797. <https://doi.org/10.1038/sj.ijo.0803667>
- Oja, P., Titze, S., Bauman, A., de Geus, B., Krenn, P., Reger-Nash, B., & Kohlberger, T. (2011). Health benefits of cycling: A systematic review. *Scandinavian Journal of Medicine & Science in Sports*, 21(4), 496-509. <https://doi.org/10.1111/j.1600-0838.2011.01299.x>
- Owen, N., Healy, G. N., Matthews, C. E., & Dunstan, D. W. (2010). Too much sitting: The population-health science of sedentary behavior. *Exercise and Sport Sciences Reviews*, 38(3), 105-113. <https://doi.org/10.1097/JES.0b013e3181e373a2>
- Page, P. (2012). Current concepts in muscle stretching for exercise and rehabilitation. *International Journal of Sports Physical Therapy*, 7(1), 109-119. <https://doi.org/10.26603/ijsppt20120109>

- Papegaaij, S., Taube, W., Hogenhout, M., Baudry, S., & Hortobágyi, T. (2016). Aging causes a reorganization of cortical and spinal control of posture. *Frontiers in Aging Neuroscience*, 8, 73. <https://doi.org/10.3389/fnagi.2016.00073>
- Pascoe, M. C., & Parker, A. G. (2019). Physical activity and exercise as a universal depression prevention in young people: A narrative review. *Early Intervention in Psychiatry*, 13(4), 733-739. <https://doi.org/10.1111/eip.12737>
- Pascoe, M. C., Thompson, D. R., Castle, D. J., & Jenkins, Z. M. (2020). Yoga, mindfulness-based stress reduction and stress-related physiological measures: A meta-analysis. *Psychoneuroendocrinology*, 110, 104421. <https://doi.org/10.1016/j.psyneuen.2019.104421>
- Pasquali, R., Vicennati, V., Cacciari, M., & Pagotto, U. (2006). The hypothalamic-pituitary-adrenal axis activity in obesity and the metabolic syndrome. *Annals of the New York Academy of Sciences*, 1083(1), 111-128. <https://doi.org/10.1196/annals.1367.009>
- Passos, G. S., Poyares, D., Santana, M. G., D'Aurea, C. V., Youngstedt, S. D., Tufik, S., & de Mello, M. T. (2012). Effects of moderate aerobic exercise training on chronic primary insomnia. *Sleep Medicine*, 12(10), 1018-1027. <https://doi.org/10.1016/j.sleep.2012.08.004>
- Pedersen, B. K., & Saltin, B. (2015). Exercise as medicine – Evidence for prescribing exercise as therapy in 26 different chronic diseases. *Scandinavian Journal of Medicine & Science in Sports*, 25(S3), 1-72. <https://doi.org/10.1111/sms.12581>
- Pels, F., & Kleinert, J. (2016). Loneliness and physical activity: A systematic review. *International Review of Sport and Exercise Psychology*, 9(1), 231-260. <https://doi.org/10.1080/1750984X.2016.1177849>

- Penn, I. W., Sung, W. H., Lin, C. H., Chuang, E., & Chuang, T. Y. (2019). Effects of individualized Tai-Chi on balance and lower-limb strength in older adults. *BMC Geriatrics*, 19(1), 125. <https://doi.org/10.1186/s12877-019-1250-8>
- Pereira, D. S., Lima, L. M., Rocha, N. P., Souza, D. M. D., & Pereira, D. A. G. (2017). The impact of physical activity on mood and cortisol levels in older adults: A randomized controlled trial. *Journal of Aging and Physical Activity*, 25(1), 67-72. <https://doi.org/10.1123/japa.2016-0137>
- Périard, J., Travers, G., Racinais, S., & Sawka, M. (2016). Cardiovascular adaptations supporting human exercise-heat acclimation. *Autonomic Neuroscience*. <https://doi.org/10.1016/j.autneu.2016.02.002>
- Phillips, C. (2017). Brain-derived neurotrophic factor, depression, and physical activity: Making the neuroplastic connection. *Neural Plasticity*, 2017, 7260130. <https://doi.org/10.1155/2017/7260130>
- Phillips, S. A., & Jenkins, N. T. (2020). Mechanisms of increased risk of cardiovascular disease in obesity and type 2 diabetes: Role of impaired nitric oxide production. *International Journal of Molecular Sciences*, 21(21), 7695. <https://doi.org/10.3390/ijms21217695>
- Phillips, S. M., & Winett, R. A. (2010). Uncomplicated resistance training and health-related outcomes: evidence for a public health mandate. *Current Sports Medicine Reports*, 9(4), 208-213. <https://doi.org/10.1249/JSR.0b013e3181e7a8ea>
- Phillips, S. M., & Winett, R. A. (2010). Uncomplicated resistance training and health-related outcomes: evidence for a public health mandate. *Current Sports Medicine Reports*, 9(4), 208-213. <https://doi.org/10.1249/JSR.0b013e3181e7a8ea>
- Piepoli, M. F., Hoes, A. W., Agewall, S., et al. (2016). European guidelines on cardiovascular disease prevention in clinical

- practice. *European Heart Journal*, 37(29), 2315-2381. <https://doi.org/10.1093/eurheartj/ehw106>
- Piercy, K. L., Troiano, R. P., Ballard, R. M., Carlson, S. A., Fulton, J. E., Galuska, D. A., ... & Olson, R. D. (2018). The physical activity guidelines for Americans. *JAMA*, 320(19), 2020-2028. <https://doi.org/10.1001/jama.2018.14854>
- Piercy, K. L., Troiano, R. P., Ballard, R. M., Carlson, S. A., Fulton, J. E., Galuska, D. A., & Olson, R. D. (2018). The physical activity guidelines for Americans. *JAMA*, 320(19), 2020-2028. <https://doi.org/10.1001/jama.2018.14854>
- Polyzos, S. A., Kountouras, J., & Mantzoros, C. S. (2013). Adiponectin in patients with type 2 diabetes mellitus: from pathophysiology to treatment. *Metabolism: Clinical and Experimental*, 62(9), 1233-1241. <https://doi.org/10.1016/j.metabol.2013.04.005>
- Pontifex, M. B., Saliba, B. J., Raine, L. B., Picchietti, D. L., & Hillman, C. H. (2013). Exercise improves behavioral, neurocognitive, and scholastic performance in children with attention-deficit/hyperactivity disorder. *Journal of Pediatrics*, 162(3), 543-551. <https://doi.org/10.1016/j.jpeds.2012.08.036>
- Rackow, P., Scholz, U., & Hornung, R. (2014). Effects of a new sports companion on received social support and physical exercise: An intervention study. *Applied Psychology. Health and Well-Being*, 6(3), 300-317. <https://doi.org/10.1111/aphw.12029>
- Raleigh, J. P., Giles, M. D., Islam, H., Nelms, M. W., Bentley, R., Jones, J. H., ... & Gurd, B. (2018). Contribution of central and peripheral adaptations to changes in maximal oxygen uptake following 4 weeks of sprint interval training. *Applied Physiology, Nutrition, and Metabolism*. <https://doi.org/10.1139/apnm-2017-0864>
- Ratamess, N. A., Alvar, B. A., Evetoch, T. K., Housh, T. J., Kibler, W. B., Kraemer, W. J., & Triplett, N. T. (2012). Progression models in

- resistance training for healthy adults. *Medicine & Science in Sports & Exercise*, 41(3), 687-708. <https://doi.org/10.1249/mss.0b013e3181915670>
- Reid, K. J., Baron, K. G., Lu, B., Naylor, E., Wolfe, L., & Zee, P. C. (2010). Aerobic exercise improves self-reported sleep and quality of life in older adults with insomnia. *Sleep Medicine*, 11(9), 934-940. <https://doi.org/10.1016/j.sleep.2010.04.014>
- Reid, K. J., Santostasi, G., Baron, K. G., Wilson, J., Kang, J., & Zee, P. C. (2013). Timing and intensity of light correlate with body weight and sleep duration. *Sleep*, 36(6), 861-867. <https://doi.org/10.5665/sleep.2702>
- Reiner, M., Niermann, C., Jekauc, D., & Woll, A. (2013). Long-term health benefits of physical activity—a systematic review of longitudinal studies. *BMC Public Health*, 13, 813. <https://doi.org/10.1186/1471-2458-13-813>
- Rheaume, C., Arsenault, B. J., Belanger, C., Pérusse, L., Tremblay, A., Bouchard, C., & Després, J. P. (2011). Low cardiorespiratory fitness levels and elevated blood pressure: What is the contribution of visceral adiposity? *Hypertension*, 58(6), 1034-1040. <https://doi.org/10.1161/HYPERTENSIONAHA.111.176818>
- Robinson, S., Bisson, A., Hughes, M., Ebert, J., & Lachman, M. (2018). Time for change: using implementation intentions to promote physical activity in a randomised pilot trial. *Psychology & Health*. <https://doi.org/10.1080/08870446.2018.1539487>
- Ross, R., Hudson, R., Stotz, P. J., & Lam, M. (2015). Effects of exercise amount and intensity on abdominal obesity and glucose tolerance in obese adults: A randomized trial. *Annals of Internal Medicine*, 162(5), 325-334. <https://doi.org/10.7326/M14-1189>
- Ryan, R. M., & Deci, E. L. (2017). Self-determination theory: Basic psychological needs in motivation, development, and

- wellness. *Guilford Press*. <https://doi.org/10.1007/s11031-016-9575-9>
- Ryde, G. C., Atkinson, P., Stead, M., Gorely, T., & Evans, J. M. M. (2020). Physical activity in paid work time for desk-based employees: a qualitative study of employers' and employees' perspectives. *BMC Public Health*. <https://doi.org/10.1186/s12889-020-08580-1>
- Safi, A., Cole, M., Kelly, A., Zariwala, M., & Walker, N. (2022). Workplace physical activity barriers and facilitators: A qualitative study based on employees physical activity levels. *International Journal of Environmental Research and Public Health*. <https://doi.org/10.3390/ijerph19159442>
- Salami, S., Bandeira, P. F. R., Mashhadi, M. R. (2024). Associations between biological maturation and motor competence in prepubertal children. *Children, ResearchGate*. <https://www.researchgate.net/publication/384199104>
- Sallis, J. F., Cerin, E., Conway, T. L., Adams, M. A., Frank, L. D., Pratt, M., ... & Reis, R. (2016). Physical activity in relation to urban environments in 14 cities worldwide: A cross-sectional study. *The Lancet*, 387(10034), 2207-2217. [https://doi.org/10.1016/S0140-6736\(15\)01039-3](https://doi.org/10.1016/S0140-6736(15)01039-3)
- Salmon, P. (2001). Effects of physical exercise on anxiety, depression, and sensitivity to stress: A unifying theory. *Clinical Psychology Review*, 21(1), 33-61. [https://doi.org/10.1016/S0272-7358\(99\)00032-X](https://doi.org/10.1016/S0272-7358(99)00032-X)
- Schoenfeld, B. J. (2013). Potential mechanisms for a role of metabolic stress in hypertrophic adaptations to resistance training. *Sports Medicine*, 43(3), 179-194. <https://doi.org/10.1007/s40279-013-0017-1>
- Schubert, M. M., Sabapathy, S., Leveritt, M., & Desbrow, B. (2013). Acute exercise and hormones related to appetite regulation: A

- meta-analysis. *Sports Medicine*, 44(3), 387-403. <https://doi.org/10.1007/s40279-013-0120-6>
- Schuch, F. B., Vancampfort, D., Firth, J., & Rosenbaum, S. (2016). Physical activity and incident depression: A meta-analysis of prospective cohort studies. *American Journal of Psychiatry*, 175(7), 631-648. <https://doi.org/10.1176/appi.ajp.2018.17111194>
- Schuch, F. B., Vancampfort, D., Firth, J., Rosenbaum, S., Ward, P. B., Silva, E. S., ... & Stubbs, B. (2016). Physical activity and incident depression: A meta-analysis of prospective cohort studies. *American Journal of Psychiatry*, 175(7), 631-648. <https://doi.org/10.1176/appi.ajp.2018.17111194>
- Siddiqui, N., Nessa, A., & Hossain, M. (2010). Regular Physical Exercise: Way to Healthy Life. Mymensingh Medical Journal.
- Simons, D., de Bourdeaudhuij, I., Clarys, P., De Cocker, K., Vandelaanotte, C., & Deforche, B. (2018). A Smartphone App to Promote an Active Lifestyle in Lower-Educated Working Young Adults: Development, Usability, Acceptability, and Feasibility Study. *JMIR mHealth and uHealth*. Retrieved from <https://doi.org/10.2196/mhealth.8287>
- Singh, N. A., & Clements, K. M. (2012). The effectiveness of physical exercise as a treatment for depression in older adults: A meta-analysis of randomized clinical trials. *Journal of Geriatric Psychiatry and Neurology*, 25(3), 152-161. <https://doi.org/10.1177/0891988712448852>
- Smith, A. E., Williams, T. D., & Wright, H. H. (2021). The influence of physical activity on the relationship between emotional regulation and well-being. *Journal of Health Psychology*, 26(12), 2196-2207. <https://doi.org/10.1177/1359105320939563>
- stabrooks, P. A., Harden, S. M., & Almeida, F. A. (2012). Group dynamics in physical activity promotion: What works? *Social*

- and Personality Psychology Compass*, 6(1), 18-40.
<https://doi.org/10.1111/j.1751-9004.2011.00409.x>
- Stillman, C. M., Cohen, J., Lehman, M. E., & Erickson, K. I. (2020). Mediators of physical activity on neurocognitive function: A review at multiple levels of analysis. *Frontiers in Human Neuroscience*, 14, 229. <https://doi.org/10.3389/fnhum.2020.00229>
- Stonerock, G. L., Hoffman, B. M., Smith, P. J., & Blumenthal, J. A. (2015). Exercise as treatment for anxiety: Systematic review and analysis. *Annals of Behavioral Medicine*, 49(4), 542-556. <https://doi.org/10.1007/s12160-014-9685-9>
- Straker, L., Mathiassen, S. E., & Holtermann, A. (2018). The importance of physical activity and cardiorespiratory fitness for optimal health: The case for occupational physical activity. *Scandinavian Journal of Work, Environment & Health*, 44(4), 389-393. <https://doi.org/10.5271/sjweh.3730>
- Strasser, B., & Schobersberger, W. (2011). Evidence for resistance training as a treatment therapy in obesity. *Journal of Obesity*, 2011, 482564. <https://doi.org/10.1155/2011/482564>
- Stutz, J., Eiholzer, R., & Spengler, C. M. (2019). Effects of evening exercise on sleep in healthy participants: A systematic review and meta-analysis. *Sports Medicine*, 49(2), 269-287. <https://doi.org/10.1007/s40279-018-1015-0>
- Sullivan, A., & Lachman, M. (2017). Behavior Change with Fitness Technology in Sedentary Adults: A Review of the Evidence for Increasing Physical Activity. *Frontiers in Public Health*, 4. <https://doi.org/10.3389/fpubh.2016.00289>
- Swift, D. L., Johannsen, N. M., Lavie, C. J., Earnest, C. P., & Church, T. S. (2014). The role of exercise and physical activity in weight loss and maintenance. *Progress in Cardiovascular Diseases*, 56(4), 441-447. <https://doi.org/10.1016/j.pcad.2013.09.012>

- Telama, R., Yang, X., Leskinen, E., Kankaanpää, A., Hirvensalo, M., Tammelin, T., ... & Raitakari, O. T. (2014). Tracking of physical activity from early childhood through youth into adulthood. *Medicine & Science in Sports & Exercise*, 46(5), 955-962. <https://doi.org/10.1249/MSS.0000000000000181>
- Thompson, W. R. (2019). Worldwide survey of fitness trends for 2019. *ACSM's Health & Fitness Journal*, 23(6), 10-17. <https://doi.org/10.1249/FIT.0000000000000479>
- Thompson, W. R., Gordon, N. F., & Pescatello, L. S. (Eds.). (2013). *ACSM's Guidelines for Exercise Testing and Prescription*. Lippincott Williams & Wilkins. <https://doi.org/10.1249/01.MSS.0000422739.77597.8d>
- Tremblay, M. S., Aubert, S., Barnes, J. D., Saunders, T. J., Carson, V., Latimer-Cheung, A. E., ... & Chastin, S. F. M. (2017). Sedentary behavior research network (SBRN)–Terminology consensus project process and outcome. *International Journal of Behavioral Nutrition and Physical Activity*, 14(1), 75. <https://doi.org/10.1186/s12966-017-0525-8>
- Tremblay, M. S., Colley, R. C., Saunders, T. J., Healy, G. N., & Owen, N. (2011). Physiological and health implications of a sedentary lifestyle. *Applied Physiology, Nutrition, and Metabolism*, 35(6), 725-740. <https://doi.org/10.1139/H11-079>
- Vallance, J. K., Buman, M. P., Lynch, B. M., Boyle, T., & Courneya, K. S. (2018). Associations of objectively-assessed physical activity and sedentary time with sleep quality in colorectal cancer survivors. *Mental Health and Physical Activity*, 14, 36-39. <https://doi.org/10.1016/j.mhpa.2017.12.001>
- van der Ploeg, H. P., Chey, T., Korda, R. J., Banks, E., & Bauman, A. (2012). Sitting time and all-cause mortality risk in 222,497 Australian adults. *Archives of Internal Medicine*, 172(6), 494-500. <https://doi.org/10.1001/archinternmed.2011.2174>

- Van Gaal, L. F., Mertens, I. L., & De Block, C. E. (2008). Mechanisms linking obesity with cardiovascular disease. *Nature*, 444(7121), 875-880. <https://doi.org/10.1038/nature05487>
- Venables, M. C., & Jeukendrup, A. E. (2012). Endurance training and obesity: Effectiveness of training for weight loss. *Sports Medicine*, 42(2), 151-165. <https://doi.org/10.2165/11596920-00000000-00000>
- Venditti, E., Wylie-Rosett, J., Delahanty, L., Mele, L., Hoskin, M., & Edelstein, S. (2014). Short and long-term lifestyle coaching approaches used to address diverse participant barriers to weight loss and physical activity adherence. *The International Journal of Behavioral Nutrition and Physical Activity*. <https://doi.org/10.1186/1479-5868-11-16>
- Vissers, D., Hens, W., Taeymans, J., Baeyens, J. P., Poortmans, J., & Van Gaal, L. (2013). The effect of exercise on visceral adipose tissue in overweight adults: A systematic review and meta-analysis. *PLoS One*, 8(2), e56415. <https://doi.org/10.1371/journal.pone.0056415>
- Vivar, C., & van Praag, H. (2017). Running changes the brain: The long and the short of it. *Progress in Brain Research*, 234, 1-25. <https://doi.org/10.1016/bs.pbr.2017.06.001>
- Warburton, D. E., & Bredin, S. S. (2017). Health benefits of physical activity: A systematic review of current systematic reviews. *Current Opinion in Cardiology*, 32(5), 541-556. <https://doi.org/10.1097/HCO.0000000000000437>
- Warburton, D. E., & Bredin, S. S. (2017). Health benefits of physical activity: A systematic review of current systematic reviews. *Current Opinion in Cardiology*, 32(5), 541-556. <https://doi.org/10.1097/HCO.0000000000000437>
- Watson, S. L., Weeks, B. K., Weis, L. J., Harding, A. T., & 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), 211-220. <https://doi.org/10.1002/jbmr.3284>
- Westcott, W. L. (2012). Resistance training is medicine: Effects of strength training on health. *Current Sports Medicine Reports*, 11(4), 209-216. <https://doi.org/10.1249/JSR.0b013e31825dabb8>
- Westcott, W. L. (2012). Resistance training is medicine: Effects of strength training on health. *Current Sports Medicine Reports*, 11(4), 209-216. <https://doi.org/10.1249/JSR.0b013e31825dabb8>
- Wewege, M., van den Berg, R., Ward, R. E., & Keech, A. (2017). The effects of high-intensity interval training vs. moderate-intensity continuous training on body composition in overweight and obese adults: A systematic review and meta-analysis. *Obesity Reviews*, 18(6), 635-646. <https://doi.org/10.1111/obr.12532>
- Willis, L. H., Slentz, C. A., Bateman, L. A., Shields, A. T., Piner, L. W., Bales, C. W., & Kraus, W. E. (2012). Effects of aerobic and/or resistance training on body mass and fat mass in overweight or obese adults. *Journal of Applied Physiology*, 113(12), 1831-1837. <https://doi.org/10.1152/japplphysiol.01370.2011>
- World Health Organization. (2020). *WHO guidelines on physical activity and sedentary behaviour*. <https://doi.org/10.1136/bjsports-2020-102955>
- Youngstedt, S. D. (2019). Effects of exercise on sleep. *Clinics in Sports Medicine*, 24(2), 355-365. <https://doi.org/10.1016/j.csm.2004.12.003>

BIOGRAFI PENULIS



Ns. Arif Rohman Mansur, S.Kep., M.Kep

Penulis lahir di Jepara pada 28 Agustus 1987, anak kelima dari lima bersaudara. Penulis meraih gelar Sarjana (S.Kep) dan Pendidikan Keperawatan Profesional (Ns) serta Magister Keperawatan dari Program Studi Ilmu Keperawatan (PSIK) Fakultas Kedokteran Universitas Gadjah Mada (UGM) masing-masing pada tahun 2009, 2010, dan 2015. Penulis telah berkarya sebagai Dosen di Departemen Ilmu Kesehatan Anak dan Maternitas, Fakultas Keperawatan Universitas Andalas. Selain menjadi dosen, beliau juga aktif menulis buku, artikel di media massa dan jurnal, mengelola Jurnal Pengabdian Masyarakat (Warta Pengabdian Andalas). Salah satu motto penulis adalah "Berani Mencoba dan Terus Belajar."



Ns. Ira Mulya Sari, M.Kep, Sp.Kep.An

Ira Mulya Sari, seorang wanita yang lahir di Padang pada 13 April 1984, adalah dosen tetap di bagian Kebidanan dan Anak di Fakultas Keperawatan Universitas Andalas. Sebelumnya, ia mengajar di STIKes Indonesia Padang dan Akper Nabilah Padang Panjang. Dikenal dengan sebutan akrab Ai, ia telah menikah dan dikaruniai empat anak: Zahid, Shadiq, Shanum, dan Ali. Ia menyelesaikan pendidikan spesialisasinya di bidang keperawatan anak di Universitas Indonesia pada tahun 2016.



Sandrina Indah Paraswati

Penulis kedua lahir di Kulon Progo pada 27 Februari 2004. Ia adalah mahasiswa S1 keperawatan di Universitas Airlangga (UNAIR), tempat ia memulai studinya pada tahun 2022. Sepanjang karier akademisnya, ia telah terlibat dalam penelitian ilmiah, menulis, dan berpartisipasi aktif dalam berbagai kompetisi akademik. Pada Juli 2024, ia mengikuti program pertukaran pelajar di Jepang, mendapatkan pengalaman internasional yang berharga dalam praktik keperawatan. Selain itu, ia saat ini sedang magang di Nurse Labour Market App, menerapkan pengetahuan akademisnya secara profesional. Ia juga bekerja paruh waktu sebagai Asisten Dosen Riset, untuk terus mengembangkan keterampilan riset dan akademisnya. Berpegang pada mottoanya, "Masa depan Anda diciptakan oleh apa yang Anda lakukan hari ini," ia tetap berkomitmen untuk terus belajar dan berkembang.