

Rico Zimek/Jaime Fernandez-Fernandez/Thimo Wiewelhofe/Alexander Ferrauti

Intervallsprint-Training: effektiver als das High Intensity Training in den Sportspielen?

Literatur

Basset, D. R. Jr. & Howley, E. T. (2000). Limiting factors for maximum oxygen uptake and determinants of endurance performance. *Medicine and Science in Sport and Exercise*, 32 (1), 70-84.

Bickham, D. C., Bentley, D. J., Rossignol, P. F. & Cameron-Smith, D. (2006). The effects of short-term sprint training on MCT expression in moderately endurance-trained runners. *European Journal of Applied Physiology*, 96 (6), 636-643.

Borg, G. (1998). *Perceived Exertion and Pain Scales*. Champaign, IL: Human Kinetics.

Buchheit, M., Bishop, D., Haydar, B., Nakamura, F.Y. & Ahmadi, S. (2010). Physiological responses to shuttle repeated-sprint running. *International Journal of Sports Medicine*, 31 (6), 402-409.

Burgomaster, K. A., Hughes, S. C., Heigenhauser, G. J., Bradwell, S. N. & Gibala, M. J. (2005). Six sessions of sprint interval training increases muscle oxidative potential and cycle endurance capacity in humans. *Journal of Applied Physiology*, 98 (6), 1985-1990.

Burgomaster, K. A., Heigenhauser, G. J. & Gibala, M. J. (2006). Effect of short-term sprint interval training on human skeletal muscle carbohydrate metabolism during exercise and time-trial performance. *Journal of Applied Physiology*, 100 (6), 2041-2047.

Burgomaster, K. A., Howarth, K. R., Phillips, S. M., Rakobowchuk, M., MacDonald, M. J., McGee, S. L. & Gibala, M. J. (2008). Similar metabolic adaptations during exercise after low volume sprint interval and traditional endurance training in humans. *The Journal of Physiology*, 586 (1), 151-160.

Chamari, K., Hachana, Y., Kaouech, F., Jeddi, R., Moussa-Chamari, I. & Wisløff, U. (2005). Endurance training and testing with the ball in young elite soccer players. *British Journal of Sports Medicine*, 30 (1), 24-28.

Crespo, M. & Miley, D. (1998). *ITF Advanced Coaches Manual*. London: ITF Ltd.

Fernandez-Fernandez, J., Sanz-Rivas, D. & Mendez-Villanueva, A. (2009). A review of the activity profile and physiological demands of tennis match play. *Strength & Conditioning Journal*, 31 (4), 15-26.

Ferrari Bravo, D., Impellizzeri, F. M., Rampini, E., Castagna, C., Bishop, D. & Wisløff, U. (2007). Sprint vs. interval training in football. *International Journal of Sports Medicine*, 29 (8), 668-674.

Ferrauti, A., Kinner, V. J., Fernandez-Fernandez, J. (2011). The Hit & Turn Tennis Test: an acoustically controlled endurance test for tennis players. *Journal of Sports Science*, 29 (5), 485-494.

Foster, C., Florhaug, J. A., Franklin, J., Gottschall, L., Hrovatin, L. A., Parker, S., Doleshal, P. & Dodge, C. A. (2001). A new approach to monitoring exercise training. *Journal of Strength and Conditioning Research*, 15 (1), 109-115.

Gerisch, G. & Weber, K. (1992). Diagnostik der Ausdauer und Schnelligkeit im Leistungsfußball. *Fußballtraining*, 10 (8), 32-38.

Gibala, M. J., Little, J. P., Essen, M. van, Wilkin, G. P., Burgomaster, K. A., Safdar, A. S., Raha, S. & Tarnopolsky, M. A. (2006). Short-term sprint interval versus traditional endurance training: similar initial adaptations in human skeletal muscle and exercise performance. *The Journal of Physiology*, 575 (Pt. 3), 901-911.

Gibala, M. J. & McGee, S. L. (2008). Metabolic adaptations to short-term high-intensity interval training: a little pain for a lot of gain? *Exercise and Sport Sciences Reviews*, 36 (2), 58-63.

Glaister, M. (2005). Multiple sprint work. Physiological responses, mechanisms of fatigue and the influence of aerobic fitness. *Sports Medicine*, 35 (9), 757-777.

Hazzell, T. J., Macpherson, R. E., Gravelle, B. M. & Lemon, P. W. (2010). 10- or 30-s sprint interval training bouts enhance both aerobic and anaerobic performance. *European Journal of Applied Physiology*, 110 (1), 153-160.

Helgerud, J., Engen, L. C., Wisløff, U. & Hoff, J. (2001). Aerobic endurance training improves soccer performance. *Medicine and Science in Sports and Exercise*, 33 (11), 1925-1931.

Hill-Haas, S., Coutts, A. J., Dawson, B. T. & Rowsell, G. J. (2009). Generic versus small-sided game training in soccer. *International Journal of Sports Medicine*, 30 (9), 636-642.

Hunt, T. K., Aslam, R. S., Beckert, S., Wagner, S., Ghani, Q. P., Hussain, M. Z., Roy, S. & Sen, C. K. (2007). Aerobically derived lactate stimulates revascularization and tissue repair via redox mechanisms. *Antioxidants & Redox Signaling*, 9 (8), 1115-1124.

Iaia, F. M., Rampini, E. & Bangsbo, J. (2009). High-intensity training in football. *International Journal of Sports Physiology and Performance*, 4 (3), 291-306.

Impellizzeri, F. M., Rampini, E. & Marcora, S. M. (2005). Physiological assessment of aerobic training in soccer. *Journal of Sports Sciences*, 23 (6), 583-592.

Impellizzeri, F. M., Marcora, S. M., Castagna, S., Reilly, T., Sassi, A., Iaia, F. M. & Rampini, E. (2006). Physiological and performance effects of generic versus specific aerobic training in soccer players. *International Journal of Sports Medicine*, 27 (6), 483-492.

Krustrup, P., Hellsten, Y. & Bangsbo, J. (2004). Intense interval training enhances human skeletal muscle oxygen uptake in the initial phase of dynamic exercise at high but not at low intensities. *The Journal of Physiology*, 559 (Pt. 1), 335-345.

Langley, G. B. & Sheppard (1985). The visual analogue scale: its use in pain measurement. *Rheumatology International*, 5 (4), 145-148.

Laursen, P. B. & Jenkins, D. G. (2002). The scientific basis for high-intensity interval training: Optimising training programmes and maximizing performance in highly trained endurance athletes. *Sports Medicine*, 31 (1), 53-73.

MacDougall, J. D., Hicks, A. L., MacDonald, J. R., McKelvie, R. S., Green, H. J. & Smith, K. M. (1998). Muscle performance and enzymatic adaptations to sprint interval training. *Journal of Applied Physiology*, 84 (6), 2138-2142.

Mader, A., Liesen, H., Heck, H., Philippi, H., Rost, R., Schuerch, P. & Hollmann, W. (1976). Zur Beurteilung der sportartspezifischen Ausdauerleistungsfähigkeit im Labor. *Sportarzt und Sportmedizin*, 27 (4), 80-88.

McMillan, K., Helgerud, J., Macdonald, R. & Hoff, J. (2005). Physiological adaptations to soccer specific endurance training in professional youth soccer players. *British Journal of Sports Medicine*, 39 (5), 273-277.

Mohr, M., Krustrup, P., Nielsen, J. J., Nybo, L., Juel, C. & Bangsbo, J. (2007). Effect of two different intense training regimens on skeletal muscle ion transport proteins and fatigue development. *American Journal of Physiology. Regulatory, Integrative and Comparative Physiology*, 292 (4), R1594-R1602.

Prior, B. M., Yang, H. T. & Terjung, R. L. (2004). What makes vessels grow with exercise training? *Journal of Applied Physiology*, 97 (3), 1119-1128.

Rakobowchuk, M., Tanguay, S., Burgomaster, K. A., Howarth, K. R., Gibala, M. J. & MacDonald, M. J. (2008). Sprint interval and traditional endurance training induce similar improvements in peripheral arterial stiffness and flow-mediated dilation in healthy humans. *American Journal of Physiology. Regulatory, Integrative and Comparative Physiology*, 295 (1), R236-R242.

Rodas, G., Ventura, J. L., Cadefau, J. A., Cussò, R. & Parra, J. (2000). A short training programme for the rapid improvement of both aerobic and anaerobic metabolism. *European Journal of Applied Physiology*, 82 (5-6), 480-486.

Ross, A. & Leveritt, M. (2001). Long-term metabolic and skeletal muscle adaptations to short-sprint training. *Sports Medicine*, 31 (15), 1063-1082.

Stockhausen, W., Weber, K., Born, P., Hinz, H., Krahl, H., Michaelis, U., Pfannkoch, P., Zofka, Z. & Keul, K. (1997). Leistungsdiagnostik im Tennis. Ein Konzept zur Vereinheitlichung der Leistungsdiagnostik für Nachwuchsspieler/-innen im Deutschen Tennis-Bund. *Leistungssport*, 27 (5), 34-36.

Spencer, M., Bishop, D., Dawson, B. & Goodman, C. (2005). Physiological and metabolic responses of repeated-sprint activities: Specific to field-based team sports. *Sports Medicine*, 35 (12), 1025-1044.

Wahl, P., Hägele, M., Zinner, C., Bloch, W. & Mester, J. (2010). High Intensity Training (HIT) for the improvement of endurance capacity of recreationally active people and in prevention & rehabilitation. *Wiener Medizinische Wochenschrift*, 160 (23-24), 627-636.

*

Die Autoren

Rico ZIMEK, wissenschaftliche Hilfskraft am Lehrstuhl für Trainingswissenschaft an der Ruhr-Universität Bochum.
 Dr. Jaime FERNANDEZ-FERNANDEZ, wissenschaftlicher Mitarbeiter am Lehrstuhl für Trainingswissenschaft an der Ruhr-Universität Bochum.
 Thimo WIEWELHOVE, Masterstudent im Schwerpunkt „Diagnostik und Intervention im Sport“ an der Ruhr-Universität Bochum.
 Prof. Dr. Alexander FERRAUTI, Leiter des Lehrstuhls für Trainingswissenschaft an der Ruhr-Universität Bochum.
 Anschrift: Rico Zimek, Ruhr-Universität Bochum, Fakultät für Sportwissenschaft, UHW 8/827, Stiepelers Straße 129, 44801 Bochum
 E-Mail: Rico.Zimek@rub.de