

# SPORDA GERME EGZERSİZLERİNİN ÖNEMİ

## 8. BÖLÜM

Özgür EKEN<sup>1</sup>

### GİRİŞ

Sporda germe egzersizleri genellikle ısınma protokollerini takiben gerçekleştirilmektedir. Ülkemizde spor branşları gözlemlendiğinde geleneksel deneme yanılma yöntemleri sonucu oluşan her antrenörün sporcusunu farklı şekilde ısınma sonrası germe egzersizlerine maruz bıraktığı gözlemlenmektedir. Asıl amaç ise vücut ısısının ısınma protokolleriyle artırılıp ardından germe egzersizleriyle eklem hareket açıklığının genişletilmesi, kas tendon yapısındaki travmaların müsabaka öncesi azaltılarak yaralanmaların önlenmesi ve performans gelişimini sağlamaktır. Ayrıca germe egzersizlerinin mekanizması ve türleri incelenerek okuyucuya katkı sağlanması hedeflenmektedir.

### SPORDA GERME EGZERSİZLERİNİN TARİHİ

Yoganın öncüsü olan nefes kontrol egzersizleri, MÖ 2600 civarında Çin'de uygulandı. Germe egzersizlerinin de dahil edilip edilmediği bilinmemektedir ancak Han Hanedanlığının başlarındaki Tao Yin aktiviteleri için egzersiz şemasında nefes ve duruşlar geliştirilmiştir. Bu egzersizler veya duruşlar, spesifik hastalıkları

<sup>1</sup> Arş.Grv.İnönü Üniversitesi Spor Bilimleri Fakültesi, ozgur.eken@inonu.edu.tr

## KAYNAKÇA

1. Akyüz, M., Özmaden, M., Doğru, Y., Karademir, E., Aydın, Y., & Hayta, Ü. (2017). Effect of static and dynamic stretching exercises on some physical parameters in young basketball players Genç basketbolcularda statik ve dinamik germe egzersizlerinin bazı fiziksel parametrelere etkisi. *Journal of Human Sciences*, 14(2), 1492-1500.
2. Alter Michael J, Sport Stretch, Human Kinetics Pub; 1990.
3. Alter MJ. Science of flexibility. Champaign, IL: Human Kinetics Publishers, 1996.
4. Behm DG and Chaouachi A. A review of the acute effects of static and dynamic stretching on performance. *Eur J Appl Physiol* 111: 2633–2651, 2011.
5. Behm DG and Kibele A. Effects of differing intensities of static stretching on jump performance. *Eur J Appl Physiol* 101: 587–594, 2007.
6. Behm DG, Bambury A, Cahill F, and Power K. Effect of acute static stretching on force, balance, reaction time, and movement time. *Med Sci Sports Exerc* 36: 1397–1402, 2004.
7. Behm DG, Blazevich AJ, Kay AD, and McHugh M. Acute effects of muscle stretching on physical performance, range of motion, and injury incidence in healthy active individuals: A systematic review. *Appl Physiol Nutr Metab* 41: 1–11, 2016.
8. Behm DG, Bradbury EE, Haynes AT, Hodder JN, Leonard AM, and Paddock NR. Flexibility is not related to stretch-induced deficits in force or power. *J Sports Sci Med* 5: 33–42, 2006.
9. Behm DG, Button DC, and Butt JC. Factors affecting force loss with prolonged stretching. *Can J Appl Physiol* 26: 261–272, 2001.
10. Behm DG, Plewe S, Grage P, Rabbani A, Beigi HT, Byrne JM, and Button DC. Relative static stretch-induced impairments and dynamic stretch-induced enhancements are similar in young and middle-aged men. *Appl Physiol Nutr Metab* 36: 790–797, 2011.
11. Behm, D. G. (2018). *The science and physiology of flexibility and stretching: implications and applications in sport performance and health*. Routledge.
12. Chtourou H, Aloui A, Hammouda O, Chaouachi A, Chamari K, and Souissi N. Effect of static and dynamic stretching on the diurnal variations of jump performance in soccer players. *PLoS One* 8: e70534, 2013.
13. Delorme T, Ferris B, and Gallagher J. Effect of progressive resistance exercise on muscle contraction time. *Arch Phys Med* 33: 86–92, 1952.

14. Delorme T. Restoration of muscle power by heavy-resistance exercises. *J Bone Joint Surg* 27: 645–667, 1945.
15. Denerel, N., Ergün, M., Yüksel, O., Özgürbüz, C., & Karamızrak, O. (2019). The Acute Effects of Static and Dynamic Stretching Exercises on Dynamic Balance Performance. *Spor Hekimliği Dergisi*, 54(3), 148-157.
16. Enoka RM, Hutton RS, and Eldred E. Changes in excitability of tendon tap and Hoffmann reflexes following voluntary contractions. *Electroencephalogr Clin Neurophysiol* 48: 664–672, 1980.
17. Franco BL, Signorelli GR, Trajano GS, et al. Acute effects of three different stretching protocols on the Wingate test performance. *J Sports Sci Med*. 2012;11(1):1-7.
18. Freitas SR, Mendes B, Le Sant G, Andrade RJ, Nordez A, and Milanovic Z. Can chronic stretching change the muscle-tendon mechanical properties? A review. *Scand J Med Sci Sports* 28 (3): 794–806, 2018.
19. Gonzalez-Rave JM, Sanchez-Gomez A, and Santos-Garcia DJ. Efficacy of two different stretch training programs (passive vs. proprioceptive neuromuscular facilitation) on shoulder and hip range of motion in older people. *J Strength Cond Res* 26: 1045–1051, 2012.
20. Halbertsma J, Bolhuis A, and Goeken L. Sport stretching: Effect of passive muscle stiffness of short hamstrings. *Arch Phys Med Rehabil* 77: 688–692, 1996.
21. Hindle KB, Whitcomb TJ, Briggs WO, and Hong J. Proprioceptive neuromuscular facilitation (PNF): Its mechanisms and effects on range of motion and muscular function. *J Hum Kinet* 31: 105–113, 2012.
22. Houk JC, Crago PE, and Rymer WZ. Functional properties of the Golgi tendon organs. In: *Spinal and Supraspinal Mechanisms of Voluntary Motor Control and Locomotion*. JE Desmedt, ed. Basel: Karger, 1980, pp 33–43.
23. Kay AD, Husbands-Beasley J, and Blazeovich AJ. Effects of contract-relax, static stretching, and isometric contractions on muscle-tendon mechanics. *Med Sci Sports Exerc* 47: 2181–2190, 2015.
24. Kendall BJ. The acute effects of static stretching compared to dynamic stretching with and without an active warm up on anaerobic performance. *Int J Exerc Sci*. 2017;10(1), 53-61.
25. Khan SI and Burne JA. Afferents contributing to autogenic inhibition of gastrocnemius following electrical stimulation of its tendon. *Brain Res* 1282: 28–37, 2009.

26. Kjaer M. Role of extracellular matrix in adaptation of tendon and skeletal muscle to mechanical loading. *Physiol Rev* 84: 649–698, 2004.
27. Knudson D, Bennett K, Corn R, Leick D, and Smith C. Acute effects of stretching are not evident in the kinematics of the vertical jump. *J Strength Cond Res* 15: 98–101, 2001.
28. Knudson DV, Noffal GJ, Bahamonde RE, Bauer JA, and Blackwell JR. Stretching has no effect on tennis serve performance. *J Strength Cond Res* 18: 654–656, 2004.
29. Kunitz D. *Lift: Fitness Culture from Naked Greeks and Acrobats to Jazzercise and Ninja Warriors*. New York: Harper Wave, 2016.
30. Little T, Williams AG. Effects of differential stretching protocols during warm-ups on high-speed motor capacities in professional soccer players. *J Strength Cond Res*. 2006;20(1):203-7.
31. Magnusson SP, Simonsen EB, Aagaard P, Dyhre-Poulsen P, McHugh MP, and Kjaer M. Mechanical and physical responses to stretching with and without preisometric contraction in human skeletal muscle. *Arch Phys Med Rehabil* 77: 373–378, 1996.
32. Manoel ME, Harris-Love MO, Danoff JV, and Miller TA. Acute effects of static, dynamic, and proprioceptive neuromuscular facilitation stretching on muscle power in women. *J Strength Cond Res* 22: 1528–1534, 2008.
33. Matthews PBC. Developing views on the muscle spindle. In: *Spinal and Supraspinal Mechanisms of Voluntary Motor Control and Locomotion*. JE Desmedt, ed. Basel: Karger, 1980, pp. 12–27.
34. Matthews PBC. Muscle spindles: Their messages and their fusimotor supply. In: *The Nervous System: Handbook of Physiology*. VB Brooks, ed. American Physiological Society, 1981, pp. 189–288.
35. McArdle WD, Katch FI, and Katch VL. *Exercise Physiology: Energy, Nutrition, and Human Performance*. Malvern, PA: Lea & Febiger, 1991.
36. McMillian DJ, Moore JH, Hatler BS, et al. Dynamic vs. static-stretching warm up: the effect on power and agility performance. *J Strength Cond Res*. 2006;20(3): 492-9.
37. Muratlı S. *Çocuk ve Spor (Antrenman Bilimi Işığında)*, Ankara: Bağırçan Yayımevi; 1997.
38. Osternig L, Robertson R, Troxel R, and Hansen P. Differential responses to proprioceptive neuromuscular facilitation (PNF) stretch techniques. *Med Sci Sports Exerc* 22: 106–111, 1990.
39. Petersen N, Morita H, and Nielsen J. Modulation of reciprocal inhibition between ankle extensors and flexors during walking in man. *J Physiol* 520: 605–619, 1999.

40. Polat, S., Çağlar, E., Çatıkkaş, F. Isınma Seansında Uygulanan Dinamik ve Statik Germe Egzersizlerinin Performans Üzerine Etkileri. *Türk Spor Bilimleri Dergisi*, 2(1), 31-38.
41. Pyndt H, Laursen M, and Nielsen J. Changes in reciprocal inhibition across the ankle joint with changes in external load and pedaling rate during bicycling. *J Neurophysiol* 90: 3168–3177, 2003.
42. Robbins, J. W. and Scheuermann, B. W. (2008). Varying amounts of acute static stretching and its effect on vertical jump performance. *Journal of Strength Conditioning Research*, 22, 781–786.
43. Sady SP, Wortman M, and Blanke D. Flexibility training: Ballistic, static or proprioceptive neuromuscular facilitation? *Arch Phys Med Rehabil* 63: 261–263, 1982.
44. Sharman MJ, Cresswell AG, and Riek S. Proprioceptive neuromuscular facilitation stretching: Mechanisms and clinical implications. *Sports Med* 36: 929–939, 2006.
45. Thomas E, Bianco A, Paoli A, and Palma A. The relation between stretching typology and stretching duration: the effects on range of motion. *Int J Sports Med* 39: 243–254, 2018.
46. Trajano GS, Nosaka K, Seitz LB, and Blazevich AJ. Intermittent stretch reduces force and central drive more than continuous stretch. *Med Sci Sports Exerc* 46: 902–910, 2014.
47. Walker B. *The Stretching Book*. Walkerbout Health Pty Ltd and The Stretching Institute, 2007.
48. Weineck J. *Spor Anatomisi*. Trans. Semra Elmacı. Ankara: Spor Yayınevi; 2011.
49. Winchester, J. B., Nelson, A. G., Landin, D., Young, M. A., and Sc-hexnayder, I. C. (2008). Static stretching impairs sprint performance in collegiate track and field athletes. *Journal of Strength and Conditioning Research*, 22, 13–19.
50. Young W, Elias G, and Power J. Effects of static stretching volume and intensity on plantar flexor explosive force production and range of motion. *J Sports Med Phys Fitness* 46: 403–411, 2006.
51. Young, W. and Behm, D. (2002). Should static stretching be used during a warm up for strength and power activities? *Journal of Strength Conditioning Research*, 24, 33–37.