

Aspects related with physical exercise dependence in university students

Aspectos relacionados con la dependencia al ejercicio físico en estudiantes universitarios

Cristina Reche-García¹, Francisco J. Ortín Montero² and Alejandro Martínez-Rodríguez^{3*}

1 Departamento de Enfermería. Facultad de Enfermería. Universidad Católica San Antonio de Murcia - UCAM (Spain).

2 Departamento de Psicología Básica y Metodología del Comportamiento. Universidad de Murcia. (Spain).

3 Departamento de Química Analítica, Nutrición y Bromatología. Facultad de Ciencias. Universidad de Alicante. (Spain).

Abstract: The aim of the current study was to determine the predominance of symptoms of physical exercise dependence in university students and its relationship with variables such as, dedication to practicing sport, trait anxiety, mood, quality of sleep and adherence to a low fat diet. A total of 240 athletes were evaluated, (age: $M = 21.1$, $SD = 4.2$). The results showed that 6% have a risk of exercise dependence and was higher in the following cases: women, students below the age of 20, those who practice more weekly sessions and more sport experienced students. The risk of exercise dependence seems to be related with a higher frequency of weekly training sessions, mood alterations, sleep problems, anxious tendency and lower adherence to a low fat diet. These results show psychological indicators and signs of exercise dependence disorder that are evaluable by a sport psychologist for an early detection and intervention.

Key words: Exercise addiction, anxiety, mood states, sleep, diet, prevalence.

Resumen: Es objeto de este estudio determinar la prevalencia de sintoma-

to de dependencia al ejercicio físico en universitarios y su relación con variables como la dedicación a la práctica deportiva, ansiedad rasgo, estado de ánimo, calidad del sueño y adherencia a una dieta baja en grasa. Se evaluaron a 240 deportistas (edad: $M = 21.1$, $dt = 4.2$). Los resultados mostraron como un 6% presentaron riesgo de dependencia al ejercicio físico. Son más los casos entre las mujeres, menores de 20 años, los que practican más sesiones semanales de entrenamiento y son más experimentados. El riesgo de dependencia al ejercicio físico aparece relacionado con una mayor frecuencia de las sesiones semanales de entrenamiento, alteraciones en el estado de ánimo, problemas de sueño, propensión ansiosa y la menor adherencia a una dieta baja en grasas. Estos resultados muestran indicadores psicológicos y signos del trastorno de dependencia al ejercicio físico evaluables por un psicólogo deportivo para su detección temprana o intervención.

Palabras clave: Adicción al ejercicio, ansiedad, estado de ánimo, sueño, dieta, prevalencia.

Introduction

Exercise dependence is considered as an inherent necessity to do physical exercise in an excessive way with effects on the psycho-physiological state. This is an aspect that affects obsessive cognitions towards the concern of practising sport activities (Hamer, & Karageorghis, 2007), triggering a clinical deterioration (Hausenblas, & Downs, 2002). Risk of physical exercise dependence prevalence in athletes has been represented recently by 8.7% (Reche, De Francisco, Martínez-Rodríguez, Ros-Martínez, 2018). There seems to be certain controversy as for the age of appearance of this disorder. Most investigations support that exercise dependence affects mostly young athletes jóvenes (Allegre, Therme, & Griffiths, 2007; Lindwall, & Palmeira, 2009), however, others do not find any associations (Klein et al., 2004). As with gender, there is a similar situation, as different studies have shown differences within genders whilst others have not (Allegre et al., 2007; Reche, Martínez-Rodríguez, & Ortín, 2015).

Activities with an aerobic predominance have been indicated to fight negative effects of anxiety and slight depressive

states (Mc Donald, & Hodgdon, 1991); needing a minimal level or medium grade of activity to achieve a favourable influence on the symptoms (Annesi, 2000). It has been concluded that physical exercise produces beneficial effects on people's health (Lubans, Foster, & Biddle, 2008; López et al, 2017, 2018), improving the sensation of wellbeing and mood (Ekkekakis, & Acevedo, 2006).

However, an excessive and uncontrolled practice of physical exercise can cause opposite effects. Amongst the negative effects are withdrawal symptoms caused by the absence of physical activity; social, family or labour problems and presence of increasing injuries caused by not ceasing physical activity (Adams, Miller, & Kraus, 2003). Also, depression may be triggered when exercise is stopped (Morris, Steinburg, Sykes, & Salmon, 1990) but if activity is not paused, a state of fatigue will be produced which deteriorates physiological conditions altering sport performance and even leading to a situation of overtraining (Lemyre, Roberts, & Stray-Gundersen, 2007). This situation can then lead to a negative psychological response, harming the individual's mood (Jones, & Tenenbaum, 2009). In this way, exercises with excessively high intensities favour negative effects on athletes like anxiety and depression (Acevedo et al., 2007). On the other hand, improvements in sport performance and the attainment of an "ideal" body im-

Dirección para correspondencia [Correspondence address]: Alejandro Martínez-Rodríguez. Departamento Química Analítica, Nutrición y Bromatología. Facultad de Ciencias. Universidad de Alicante. Ctra. San Vicente del Raspeig, s/n. 30690 San Vicente del Raspeig, Alicante (Spain). E-mail: amartinezrodriguez@ua.es

11. Hamer, M., & Karageorghis, C.I. (2007). Psychobiological mechanisms of exercise dependence. *Sports Medicine*, 37(6), 477-84.
12. Hausenblas, H. A., & Downs, D. S. (2002). Exercise dependence: A systematic review. *Psychology of Sport and Exercise*, 3, 89-123.
13. Jones, C. M., & Tenenbaum, G. (2009). Adjustment Disorder: a new way of conceptualizing the overtraining syndrome. *International Review of Sport and Exercise Psychology*, 2, 181-97.
14. Klein, D. A., Bennett, A. S., Schebendach, J., Foltin, R. W., Devlin, M. J., & Walsh, B. T. (2004). Exercise "addiction" in anorexia nervosa: Model development and pilot data. *CNS Spectrums*, 9, 531-537.
15. Kline, C. E., Sui, X., Hall, M. H., Youngstedt, S. D., Blair, S. N., Earnest, C. P., & Church T. S. (2012). Dose-response effects of exercise training on the subjective sleep quality of postmenopausal women: exploratory analyses of a randomised controlled trial. *BMJ Open*, 2(4).
16. Lemyre, P., Roberts, G. C., & Stray-Gundersen J. (2007). Motivation, overtraining, and burnout: Can self-determined motivation predict overtraining and burnout in elite athletes? *European Journal of Sport Science*, 7, 115-26.
17. Lindwall, M., & Palmeira, A. (2009). Factorial validity and invariance testing of the Exercise Dependence Scale-Revised in Swedish and Portuguese exercisers. *Measurement in Physical Education and Exercise Science*, 13, 166-179.
18. López-Sánchez, G. F., Díaz-Suárez, A., Radzimiński, Ł., & Jastrzębski, Z. (2017). Effects of a 12-week-long program of vigorous-intensity physical activity on the body composition of 10- and 11-year-old children. *Journal of Human Sport & Exercise*, 12(1), 235-244. doi: 10.14198/jhse.2017.12.1.19
19. López-Sánchez, G. F., Borrego-Balsalobre, F. J., Díaz-Suárez, A., & Smith, L. (2018). Effects of a 12-week-long program of vigorous-intensity physical activity on the body composition of 6- and 7-year-old children. *Journal of Human Sport & Exercise*, 13(2proc), S445-S453. doi: <https://doi.org/10.14198/jhse.2018.13.Proc2.28>
20. Lubans D. R., Foster, C., & Biddle, S. J. H. (2008). A review of mediators of behavior in interventions to promote physical activity among children and adolescents. *Preventive Medicine*, 47, 463-470.
21. McDonald, D., & Hodgdon, J. (1991). *Psychological effects of aerobic fitness training: Research and theory*. New York: Springer Verlag.
22. McNair, D. M., Lorr, M., & Droppleman, L. F. (1971). *Manual for the profile of mood states*. San Diego, CA: Educational and Industrial Testing Service.
23. Modolo, V. B., De Mello, M. T., Gimenez, P. R. B., Tufik, S., & Antunes, H. K. M. (2009). Dependência de Exercício Físico: Humor, Qualidade de Vida em Atletas Amadores e Profissionais. *Revista Brasileira de Medicina do Esporte*, 15, 355-359.
24. Morris, M., Steinburg, H., Sykes, E. A., & Salmon, P. (1990). Effects of temporary withdrawal from regular running. *Journal of Psychosomatic Research*, 34, 493-500.
25. Reche, C., & Gómez, M. (2014). Dependencia al ejercicio físico y trastornos de la conducta alimentaria. *Apuntes de Psicología*, 32(1), 25-32.
26. Reche, C., Martínez-Rodríguez, A., & Ortín F. J. (2015). Dependencia al ejercicio físico e indicadores del estado de ánimo en deportistas universitarios. *Cuadernos de Psicología del Deporte*, 15(2), 21-26.
27. Reche, C., De Francisco, C., Martínez-Rodríguez, A., & Ros-Martínez, A. (2018). Relationship among sociodemographic and sport variables, exercise dependence, and burnout: a preliminary study in athletes. *Anales de Psicología/Annals of Psychology*, 34(2), 398-404.
28. Ricciardelli, L. A., & McCabe, M. P. (2004). A biopsychosocial model of disordered eating and the pursuit of muscularity in adolescent boys. *Psychological Bulletin*, 130, 179-205.
29. Rosa, D. A., de Mello, M. T., Negrão, A. B., & de Souza-Formigoni, M. L. (2004). Mood changes after maximal exercise testing in subjects with symptoms of exercise dependence. *Perceptual and Motor Skills*, 99(1), 341-53.
30. Sicilia, A., & González, D. (2011). Dependence and physical exercise: Spanish Validation of the exercise dependence scale-revised (EDS-R). *Spanish Journal of Psychology*, 14(1), 421-431.
31. Soldatos, C. R., Dikeos, D. G., & Paparrigopoulos, T. J. (2000). Athens Insomnia Scale: validation of an instrument based on ICD-10 criteria. *Journal of Psychosomatic Research*, 48, 555-60.
32. Spielberger, R., Gorsuch, R., & Lushene, R. (1970). *STAI Manual for the State-Trait Anxiety Inventory*. Palo Alto, CA: Consulting Psychologists.
33. Van Dongen, H. P., Maislin, G., Mullington, J. M., & Dinges, D. F. (2003). The cumulative cost of additional wakefulness: dose-response effects on neurobehavioral functions and sleep physiology from chronic sleep restriction and total sleep deprivation. *Sleep-New York then Westchester*, 26(2), 117-129.
34. Youngstedt, S. D., O'Connor, P. J., & Dishman, R. K. (1997). The effects of acute exercise on sleep: a quantitative synthesis. *Sleep*, 20, 203-14.