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Exercise and Epstein's TARGET for treatment of depressive symptoms: A randomized study



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Abstract This study was designed with a dual goal: (1) to compare the change in the scores of depressive symptoms by means of the implementation of three intervention programs in comparison to a control group: a) based on Epstein's TARGET (ET), b) without TARGET strategies (NET), and c) under conditions of active exercise (AE); and (2) to analyze whether the Self-determination Index (SDI) predicts the reduction of depressive symptoms. The participants ($N = 106$; 68 females and 38 males), aged between 18-30 years, were randomly assigned to one of the groups. Each treatment lasted 8 weeks (3 hours/week). Of the ET participants, 59.26% showed a therapeutic response, defined as a 50% reduction in the reference score, versus 25.93% for the NET, 19.23% for the AE, and 3.84% for the control group. After six months, the ET group increased their percentage of therapeutic response by slightly more than 10%, which did not occur in the other groups. SDI predicted lower levels of depressive symptoms, and our findings indicate that TARGET strategies can have a direct effect on depressive symptoms at the time of intervention and an indirect effect at a later stage due to their impact on future levels of physical activity.

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PALABRAS CLAVE

Depresión;
actividad física;
intervención;
experimento

Ejercicio y TARGET de Epstein para el tratamiento de los síntomas depresivos: un estudio aleatorio

Resumen Este estudio fue diseñado con doble objetivo: (1) comparar el cambio de las puntuaciones de síntomas depresivos mediante la implementación de tres programas de intervención: a) basado en el TARGET de Epstein (ET), b) sin estrategias del TARGET (NET) y c) bajo

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condiciones de ejercicio activo (AE), así como, d) un grupo-control; y (2) analizar si el Índice de Autodeterminación (SDI) predice la reducción de síntomas depresivos. Los participantes ($N=106$; 68 mujeres y 38 varones), con edades entre 18-30 años, fueron asignados al azar a uno de los grupos. Cada tratamiento duró 8 semanas (3 horas/semana). El 59,26% de los participantes en el grupo ET tuvo una respuesta terapéutica, definida como una reducción del 50% en la puntuación de referencia, frente al 25,93%, 19,23% y 3,84% para los grupos NET, AE y control, respectivamente. Seis meses después, el grupo ET aumentó el porcentaje de respuesta terapéutica más del 10%, lo que no ocurrió en los otros grupos. El SDI predijo niveles más bajos de síntomas depresivos. Las estrategias del TARGET pueden tener un efecto directo sobre los síntomas depresivos durante la intervención y un efecto indirecto posterior debido a su impacto sobre los niveles futuros de actividad física.

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Depression is an all too frequent mental disorder, with more than 350 million people of all ages suffering from this disorder and predictions indicating that it will become the second leading cause of disability worldwide by 2020 (World Health Organization [WHO], 2012). Although there is evidence to support the clinical efficacy of approaches such as pharmacological, somatic and/or psychological treatments for treating depression, these approaches have several limitations (Pérez-Wehbe, Perestelo-Pérez, Bethencourt-Pérez, Cuéllar-Pompa, & Peñate-Castro, 2014). An alternative approach to treating mental health disorders is physical activity (PA) and exercise. Although the quantity of PA varies between the studies reviewed, the evidence suggests that even low doses of PA can protect against depression (e.g., Bauman et al., 2012; Josefsson, Lindwall, & Archer, 2014; Teychenne, Ball, & Salmon, 2008). Most of the interventions have focused on various types of aerobic PA, such as cycling, running or walking, but other forms of PA (such as training with weights, yoga, or stretches) have been less explored (Mammen & Faulkner, 2013). However, no widely-acknowledged evidence is available which endorses specific PA programs that are effective against depression (Pomp, Fleig, Schwarzer, & Lippke, 2013). Moreover, only a few studies have analyzed the association between depressive symptoms and the type of PA within social contexts, such as participation in team sports (Sabiston et al., 2013), and no study that we are aware of has yet explored the effect of interactions with the teacher and/or with classmates in PA therapy sessions.

Analysis of the influence of the social relations that are generated (or can be generated) in PA upon depressive symptoms is of great relevance, because common symptoms of depression include isolation and avoidance of social interaction-related activities (Seime & Vickers, 2006). Another symptom of depression is a lack of motivation to undertake activities that previously gave pleasure. For this reason, recent research highlights the possible beneficial role of the theory of motivation in order to expand, inform and enrich therapeutic approaches and interventions in clinical practice (McBride et al., 2010). A new analytical factor, '*autonomous motivation for therapy*' (defined as the degree to which patients experience participation in therapy as a freely chosen option), has also become known as another powerful factor which can predict treatment outcome (Patrick & Williams, 2012).

Within this context, the self-determination theory (SDT) has emerged as a relevant contemporary approach to the design of interventions and PA programs and to better understand the processes leading to sustained motivation. A sub-theory within the SDT framework, '*the theory of basic needs*' (Deci & Ryan, 2000), argues that satisfaction of the basic psychological needs of competence, autonomy and relatedness promotes greater autonomous motivation, which in turn leads to more positive outcomes. Indeed, there is considerable evidence of the impact of autonomous motivation on participation in PA (Teixeira, Carraça, Markland, Silva, & Ryan, 2012), as well as on changing health-related behaviors (Ng et al., 2012). From the viewpoint of the theory of basic needs, contextual factors are considered critical to promote the processes and outcomes of motivation. In particular, it is assumed that positive interactions with significant others (which tend to promote and support greater autonomy and satisfaction with social-relationships, thus increasing the perception of self-competence) should have a positive and healthy effect on people (Ng et al., 2012). In a recent study, Duda et al. (2014) compared two interventions to promote exercise: 1) a standard provision; and 2) an SDT-based intervention (autonomy support), showed that changes in self-determined motivation were negatively associated with depressive symptoms.

The incidence of contextual factors in sports (more specifically, Epstein's TARGET strategies) (Epstein, 1988) on the psychological mediators, such as types of motivation and behavioral consequences, have recently been evaluated by Cecchini, Fernandez-Rio, Méndez-Giménez, Cecchini and Martins (2014). The results showed that contextual factors had a significant effect on an athlete's psychological need for self-satisfaction, self-determined motivation, as well as persistence and effort. Another study also analyzed the impact of Epstein's TARGET on PA in adolescents (Cecchini, Fernandez-Rio, & Méndez-Giménez, 2014), and the findings supported the efficacy of increasing an adolescent's intent to perform PA, as well as the time dedicated to PA in their free time.

With respect to the above findings, it is likely that the motivational climate constructed by the teacher (or 'coach') in PA sessions can also have a beneficial effect on participants' depressive symptoms. In fact, the manner in which motivation is offered affects the way in which people pursue physical health goals (Gallagher et al.,

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