



Sport Canada Research

Predictors of Excessive Exercise in Anorexia Nervosa (2009)

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Project summary

The present study was aimed at determining a model that would predict excessive exercise in individuals with anorexia nervosa. This is very important because exercising excessively while underweight, as can be the case in certain forms of sport participation, has been shown to have dangerous health consequences, and has been linked to negative prognosis and higher psychological distress. At the same time, in other populations, exercising has been shown to have positive health effects (both physical and psychological). Thus, the present study examined the associations, both positive and negative, between exercise and various psychological and behavioural variables.

Research methods

Participants were 153 patients admitted to an inpatient treatment program for anorexia nervosa. Excessive exercise status was defined as a minimum of one hour of obligatory exercise aimed at controlling shape and weight, six days per week in the month before admission. This definition of excessive exercise has been used in other published studies looking at exercise in anorexia nervosa, and, although it may appear that one hour per day of exercise is not very much, it is important to note that these individuals are at such low body weights, that any amount of activity could be considered too much. Also, many of the participants exercised much more than the one hour minimum.

The psychological and behavioural predictors used in this research had all been previously identified in past research as independent predictors of excessive exercise, but they had never been combined in the same model. The advantage of combining them was that we could see which predictors remained strong even after their shared predictive capabilities were accounted for. For example, it could have been true that depression and self-esteem were significant predictors when run separately, but if the reason they were associated with exercise was similar (e.g., negative view of self), then one of them would likely not remain a significant predictor when both were included in the same model. All the behavioural and psychological predictors were measured using widely-used and validated self-report measures.

Research results

The overall model found that while excessive exercise was indeed linked to negative factors, such as increased dietary restraint and higher levels of depression, it was also associated with lower levels of obsessive-compulsive symptoms and higher levels of self-esteem. It is interesting to note that past research has found the opposite relationship between obsessive-compulsive symptoms and excessive exercise. Finally, excessive exercise was linked to the restricting form of anorexia nervosa (vs. the bingeing/purging subtype), which is also in contrast to the findings of previous research; however, there is some evidence to suggest that the differences in the current study may have been driven more by the presence or absence of binge-eating rather than purging. These results would suggest that excessive exercise is related to both positive and negative factors, and they suggest that treatment programs, which usually encourage their patients to stop exercising entirely, should consider both the potential positive and negative effects of this recommendation. They also point to the possibility of incorporating some form of moderate exercise into treatment.



To our knowledge, the present study is the first attempt to identify a model predicting excessive exercise in patients with anorexia nervosa (AN), using previously identified predictors from the extant literature. It is important to note, however, that in some cases, we used different measures of specific variables than other studies used. Although all of the measures that we used have been widely utilized and have been shown to have good validity and reliability estimates, our understanding of excessive exercise in anorexia nervosa would be strengthened by replications of the present model by independent research groups, using the same measures we used.

Our study was also limited in that all of our participants had been admitted to inpatient treatment at the time of assessment and none were actively engaging in exercise when they were completing their questionnaire packets. Thus, it is possible that some or all of the findings may have been a reaction to not exercising. It would be a worthwhile effort to try to assess patients before they come into the treatment program to see if our current model of excessive exercise in anorexia nervosa holds. Also, it is not clear how well the results of a model of excessive exercise developed using inpatients would extend to individuals with anorexia nervosa in the community (who also often do not seek treatment and who may have less severe eating disorders).

Finally, because our study did not control for any variables (e.g., randomly assigning one group to exercise and comparing them to a group that does not exercise), we can only talk about relationships among the predictors and excessive exercise. We cannot say that the predictors cause excessive exercise, or that excessive exercise causes the predictors. It is also just as possible that they coexist together because of some other, unmeasured, variables. Future prospective research is needed to begin to determine the direction of the associations we found.

Key stakeholders and benefits

At this point, the current findings may be useful for health professionals who work with individuals with anorexia nervosa and physical activity and sport leaders dealing with participants with this condition.

Policy implications

The current recommendations for individuals presenting to intensive treatment for anorexia nervosa include stopping exercising entirely, as it has been shown to be associated with negative psychological variables and negative treatment outcome. The present findings partially support these recommendations, but do raise the possibility that there are positive aspects to exercising as well. Thus, the findings would suggest that further research is needed to determine the relationship between exercise/ excessive exercise and the course/ treatment of anorexia nervosa. It may be that some exercise, such as certain forms of sport participation, can be usefully incorporated into treatment (perhaps later in treatment as weight has begun to be restored), as long as efforts are made to prevent the exercise from becoming excessive.

Next steps

Future research is needed to replicate the present model, determine the directions of the relationships between the predictors and excessive exercise, and evaluate the impact of incorporating some form of exercise, such as certain forms of sport participation, into treatment for anorexia nervosa.

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