The Effect of Moderate or Vigorous Physical Activity on Subsequent Concentration Ability Among Children and Adolescents at Different Times of the Day

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Rationale - Teachers in schools often complain that students' attention and concentration are impaired after participating in physical education classes. Typically, after participating in physical education classes, students need to return to their classrooms and continue with their academic studies. This situation leads teachers to assume that the physical activity in physical education classes probably causes arousal in students in a way that impairs the attention required for the subsequent lessons. This assumption affects both the students (in their behavior during and after the lesson), the physical education teachers (lesson content), the school's approach (in building the timetable), and the teachers teaching adjacent to them (the lessons that come after physical education classes).

In addition, the research question regarding the impact of physical activity on subsequent concentration ability among children and adolescents at different times of the day has implications beyond the Ministry of Education, also extending to the security forces with their various branches, as the researcher represents their interest in it.

It should be noted that despite the great interest raised by the research question, surprisingly, despite the diverse implications of this topic, the literature review found that not enough research has been done on the subject, and the existing research findings did not provide a definitive answer.

In light of the above, the research question arose, "How does vigorous physical activity affect subsequent concentration ability among children and adolescents at different times of the day?"

Based on the literature review dealing with the relationship between physical exertion and concentration ability, three goals were derived for the current study:

1. To examine whether there are differences between age groups regarding the effect of vigorous or moderate physical activity on concentration ability.
2. To examine the effect of the type of effort, hard versus easy, on concentration ability.
3. To examine the effect of timing, morning versus afternoon, on concentration ability.

Methodology - The study was conducted on approximately 321 students (222 in the experimental group and 99 in the control group) from five high schools in the center of the country. The study lasted 3 days, during which students were required to perform a field task that would represent moderate physical activity ("moderate" running at a pace of 12 minutes per two kilometers) or vigorous physical activity ("hard" running at a pace of 9 minutes per two kilometers). During the various activities, students were required to fill out questionnaires and perform the following tests:

1. Test for identifying a typical attention style (Nideffer, 1974)
2. d^2 Concentration Test (Brickenkamp, 1962)
3. Accuracy in the throwing task
4. Self-feedback tasks: Self-report - "Your level of concentration"
5. Teacher questionnaire - "The student's level of concentration"

The research process is described in Table 3. Research design.

The current study has two prominent findings. First, aerobic physical activity, both moderate and vigorous, has a positive effect on concentration ability. After hard and easy exertion, both younger and older subjects improved their performance on the target shooting test and the d2 test. The second prominent finding in this study indicates that concentration ability increased after hard exertion in the morning hours, while in the afternoon hours, concentration ability was higher after easy exertion. These findings have implications in the research aspect and in the practical aspect for the school, that is, for planning the desired timetable in the school, and for planning the training setup and operational concepts among the security forces.

Bibliography

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