

The Effects of Playground Activities and Exercising on Playground Equipment on the Motor Coordination of Preschool Children

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Introduction

Play is an activity that has no other purpose than to produce satisfaction (Nykysuomen sanakirja [The Dictionary of Contemporary Finnish]). Play is a voluntary, separate, unanticipated, unproductive, normal and imaginative activity that differs from the rest of ordinary life (Callois 1958). Play is an objective in itself but it is also a means. Play supports the entire development of a child – physically, cognitively, socially and emotionally (Rogers 1990, 43). Many children's games set demands on both basic motor and coordination skills; a child has to know how to adapt his or her own movement to the movement of others in terms of time and place and be able to coordinate his or her functions of observation and movement (Ruoppila 1995, 38). The aim of this study is to assess the effects of play-like exercise on motor coordination and in addition to evaluate the reliability and usability of different tests when assessing the motor coordination of children under school age.

Methods

Preschool children (N=29) from four kindergartens (Vekaratarhat) in the Rovaniemi City and Rovaniemi Rural District areas exercised regularly, as part of the normal physical education provided by the kindergartens, either daily (n=17) or twice a week (n=12) over a ten-week period in the autumn of 2003 on play and balancing equipment supplied to the kindergartens. The kindergartens rotated the equipment among themselves at intervals of two weeks. In the spring of 2004, the preschoolers will spend 1 h/week over a ten-week period in guided play at an indoor playground built by the Lappset Group Oy.

The initial measurements (September 2003), intermediate measurements (December 2003) and final measurements (March-April 2004) include the following tests: height, weight, body composition (Inbody), 10-metre running time (photocell timing), volleyball throwing speed (photocell timing), hand compression force (Newtest), accelerated stretch jump height, and six tests in the Movement ABC group: threading beads, catching bean bag, rolling ball into goal, one-leg balance, jumping over cord, walking heels raised (Henderson, Sudgen 1992). The intermediate and final measurements will also include tests on performance speed on the motor coordination track at the playground. In addition, the kindergarten teachers are assessing the children's motor coordination using a Movement ABC checklist. Initial and final measurements are being performed on a control group that consists of preschool children (N=20) from one kindergarten in the city of Rovaniemi (Katajaranta 2). The measurement results are fed into the SPSS application and a correlation coefficient, t-test and unidirectional variance analysis are being used as the statistical methods.

Results

The only statistically significant improvement between the initial and intermediate measurements ($t=2.44$, $df=24$, $p=.022$) was in the 10-metre running time (mean 0.076; ST 0.156). The t-test results and examination of the scatter diagrams suggest that more repetitive tests would be mainly the performance of maximum power or speed tests (the 10-metre run, throwing the volleyball, hand compression force, stretch jump and threading beads). This observation supports Schmidt's (1988, 296) research results into the effect of increased speed of unidirectional movement on improved accuracy of timing and the repetitiveness of performance. The variation in the Movement ABC test results is particularly great in boys. This may be caused by the performance motivation, concentration, and attentiveness required by the tests.

Discussion/Conclusions

The autumn of 2003 indicated those tests that are worthwhile using to measure children's motor coordination. The factors of fitness and motor control (Nupponen 1997) form the ends of the continuum that describe mobility. From the perspective of motor coordination measurement, it is probably impossible to exclude either one; the test results are affected by both the characteristics of physical fitness and know-how in performance technique. Furthermore, with respect to small children, emotional and social factors should always be borne in mind: for example, the factors related to situation-specific attentiveness must not affect the results too much. With respect to the spring of 2004, it will be interesting to follow the effects of playground exercise on motor coordination and the functionality of the motor coordination track to test motor skill. These outcomes will be published in the congress.

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