

Effectiveness of physical training among children and adolescents with habilitation needs

This is an excerpt from the full technical report, which is written in Norwegian.

The excerpt provides the report's main messages in English.

No. 20–2011

Systematic review

Title Effectiveness of physical training among children and adolescents with habilitation needs

Norwegian title Effekter av fysisk trening hos barn og unge med habiliteringsbehov

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We would like to thank all contributors for their expertise in this project. Norwegian Knowledge Centre for the Health Services assumes final responsibility for the content of this report.

Norwegian Knowledge Centre for the Health Services
Oslo, November 2011

Key messages (English)

Background

The basis for a physically active life and good health is established during childhood and adolescence. Disability in children may reduce participation in daily activities and important social arenas. Obviously, physical training has positive effects on health and function. The aim of this report is to summarize the effectiveness of physical training on activity and participation among children and young people with habilitation needs. "Activity" is a child's performance of tasks and actions while "participation" is its involvement in different life situations.

We included eight systematic reviews that aim to answer our question. Participation is seldom reported as an outcome in the included systematic reviews.

Key messages

- The effectiveness of cardiorespiratory training on activity among children and young people with cerebral palsy or leukemia is uncertain.
- The effectiveness of strength training, functional training or therapeutic horseback riding on activity in children and young people with cerebral palsy is uncertain.
- The effectiveness of treadmill training on activity among children and young people with cerebral palsy, Down syndrome or children and young people that have undergone hemispherectomy is uncertain.
- The effectiveness of aquatic programs on participation among children and young people with cerebral palsy is uncertain.

The quality of the evidence is low or very low. This means that we cannot rule out the possibility that physical training is effective on activity and participation among children and young people with habilitation needs, but that it is uncertain if the results are reliable.

Title:

Effectiveness of physical training among children and adolescents with habilitation needs

Type of publication:

Systematic review

A review of a clearly formulated question that uses systematic and explicit methods to identify, select, and critically appraise relevant research, and to collect and analyse data from the studies that are included in the review. Statistical methods (meta-analysis) may or may not be used to analyse and summarise the results of the included studies.

Doesn't answer everything:

No ethical assessments and economical analysis. No recommendations.

Publisher:

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Last search for studies: May, 2011.

Peer review:

1. Astrid Nyquist, PhD student, Norwegian School of Sport Sciences
2. Marie Berg, PhD, Sunnaas Hospital HF)
3. Reidun Jahnsen, dr philos, Oslo University Hospital
4. Øyvind F. Standal, associate professor, Norges Idrettshøgskole
5. Ingeborg Beate Lidal, senior advisor, Norwegian

Executive summary (English)

Background

Multidisciplinary habilitation for children and young people should aim to achieve optimal functioning and coping abilities where the child's needs and condition are in focus. There is a consensus that physical training has beneficial effects. Numerous research studies have looked into the relationship between physical training and health in the adult population. For children and young people, and especially those with disabilities, the effects of physical training are, however, less documented. The purpose of this overview of reviews is to summarize the effects of physical training on activity and participation among children and young people with habilitation needs. "Activity" is defined as a person's performance of tasks and actions, and "participation" as a person's involvement in different life situations.

Method

We have made an overview of systematic reviews on the effects of physical training in children and young people with habilitation needs. An overview of systematic review will intercept what is all ready systematically reviewed. The evidence is based on systematic reviews of high methodological quality identified by searching the following databases: Amed, CINAHL, Cochrane Database of Systematic Reviews, Database of Abstracts of Reviews of Effects (DARE), EMBASE, Health Technology Assessment Database (HTA), ISI Web of Knowledge (Science/Social Science Citation Index), MEDLINE, OT Seeker, Pedro, PsycINFO, REHAB DATA and SveMed in May 2011. Only systematic reviews that include prospective controlled trials are included. The methodological quality of each of the included reviews, as well as the quality of the evidence (GRADE), was assessed by two investigators independently.

Results

We identified eight systematic reviews that summarize 24 primary studies with a total of 643 children and adolescents with habilitation needs. The included systematic reviews evaluate and summarize the effects of:

- cardiorespiratory training alone or combined with strength training (two reviews)
- strength training (three reviews)
- bodyweight-supported treadmill training (two reviews)
- functional training (one review)
- therapeutic horseback riding (one review)
- aquatic programs (one review)

Cardiorespiratory training alone or combined with strength training

In two reviews five relevant primary studies (173 children with habilitation needs) are summarized and show that there is little research in this field. The effectiveness of cardiorespiratory training versus control was shown to be uncertain for activity outcomes and the quality of the evidence is low or very low. We cannot draw reliable conclusions about whether the effect of cardiorespiratory training may improve activity and participation for children and young with habilitation needs.

Strength training

In three systematic reviews including six relevant primary studies with a total of 156 children with habilitation needs, the effectiveness of strength training was summarized. The summarized results show no effectiveness of strength training compared to control. The quality of the evidence is generally too low to conclude whether strength training helps to increase activity and participation.

Body weight-supported treadmill training

In two systematic reviews the effectiveness of treadmill training was summarized. They include eight relevant primary studies; children with cerebral palsy (n=133), Down's syndrome (n=60) and children who have undergone hemispherectomy (n=14). The summarized results show no group differences in "activity" outcomes among children with cerebral palsy in the intervention compared to the control group. Different effect estimates are reported for children with Down's syndrome, but the quality of documentation is very low, so no firm conclusions can be drawn.

Functional training

In one systematic review where three relevant primary studies (88 children and adolescents with cerebral palsy) are included, two of the three relevant primary studies show that functional training compared to control results in a statistical significant increase in "GMFM D and E together". Since no effect estimates are provided and the quality of the documentation is too low to draw conclusions about efficacy, we cannot conclude about the effectiveness among children with cerebral palsy.

Therapeutic horseback riding

In one systematic review with one relevant primary study with 19 children with cerebral palsy, therapeutic horseback riding did not result in improved activity or participation outcomes compared to the control treatment (no therapeutic horseback riding). The quality of the evidence is very low.

Aquatic interventions

In one systematic review the effects of an individualized aquatic program compared to a general aquatic program is summarized. One relevant primary study with a total of 20 children and young people with cerebral palsy show no effectiveness of the individualized aquatic program compared to a general aquatic program for the outcome “individual function”. No effect estimates are provided, and the quality of the evidence is very low.

Discussion

The purpose of this report has been to create a general overview of summarized research examining physical and its effectiveness on activity and participation among children and young people with habilitation needs. The population is heterogeneously defined, as is also physical training. In this context, physical training interventions are also defined broadly and can include everything from individualized training to physical training that includes play and social interaction. Given this broadly defined question, we chose to base our report on a search after and a summary of systematic reviews, a product frequently referred to as an overview of overviews. This method is well suited to provide a general overview of summarized research of large research areas, but the fact that we only include systematic reviews may also mean that important topics are not discussed unless high quality systematic reviews are produced.

Our search for systematic reviews did not lead to the inclusion of reviews that describe the effect of various social physical training activities that are typical for Norwegian conditions. Moreover, the included reviews answers only to a very limited extent if social physical training interventions can contribute to increased participation in children and young people with habilitation needs. The lack of results might indicate that there is little research to answer these questions. However, it is necessary to do an extensive search for relevant primary studies before such conclusion can be drawn. We do not rule out the possibility that there exist new primary studies that can influence or change the results.

Conclusion

The effectiveness of physical training interventions on activity and participation is uncertain for children and young with habilitation needs. Participation is seldom reported as a separate outcome in the included systematic reviews. We were not able to identify systematic reviews answering whether physical training interventions associated with play in a social setting can contribute to increased activity and participation among children and young people with habilitation needs.