Physical activity for children in health care

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Introduction

The efficiency of using physical activity (PA) in health care relies on two main qualities; the prevention or treatment effect of physical activity and the ability of the caregiver to motivate individuals to participate. In several of aspects, adults and children differ concerning these two qualities. Most importantly, the manifestations of chronic, life-style dependent diseases are less common in children, since latency between exposure and outcome is relatively long. Therefore, the promotion of PA for children in health care is often focussed on prevention of comorbidity and reduction of risk factors, rather than treating illness.

Many of the relations between physical activity and risk factors found in adults are present in young children and adolescents. These include lowered metabolic and cardiovascular risk factors, improved cognitive functioning and improved well-being among physically active individuals, compared to less active. More specifically, systematic reviews conclude that physical activity lowers blood pressure and lowers elevated blood lipids in children and adults (1). Other meta analyses and systematic reviews show beneficial effects from physical activity on glucose metabolism (2-3) and insulin sensitivity (4). Exercise has long been used as complimentary treatment in juvenile idiopathic arthritis with some beneficial effects (5). Low self-esteem and low health-related quality of life (HRQoL) have been shown to positively affected by physical activity in children and adolescents (6). Positive effects of exercise on depression has been shown in (7) Further, intense physical activity has been shown to increase cognitive abilities in untrained adolescents (as well as in adults). In single studies, relations between metabolic risk and PA has been showed in children as young as nine years old (8).

Thus, there are diseases and illnesses in which PA and exercise may be beneficial in both preventing and treating. Apart from this, children, as adults, have a need for physical activity for the prevention of other illnesses. Therefore, PA recommendations has been developed which may be regarded as a minimum of activity for both healthy and clinical populations. In Sweden and in many other countries, children are encouraged to reach 60 min of moderate-to-vigorous physical activity (MVPA) per day. The intensity needed to reach MVPA is generally accepted to be 3 METs, which corresponds to a rather brisk walk. However, in children a 4-METs cut-off has been proposed, since children has a have a higher basal metabolic rate. In addition, children are encouraged to participate in resistance training and skeletal loading activities three times per week and to participate in activities that develop their fundamental movement skills. These recommendations may also be applicable in many clinical populations for preventive purposes.

Status

Sedentary behaviours are probably as prevalent in children as in adults, but are not linked to the steep rise in risk factors as in adults. In a meta analysis of the International Children Accelerometer Database (ICAD), Ekelund and co workers (9) reported no relation between time spent sedentary and metabolic risk factors. Interestingly however, Hsu and colleagues recently reported a reversed causality, indicating a prospective in-

crease in sedentariness among children with elevated metabolic risk, (10). To date, only a few countries have issued recommendations for limiting sedentary behaviours. Limiting screen time to less than two hours and to limit motorized transport in children five to eleven years old are examples of such recommendations (CSBG, www.csbg.ca/guidelines). Other such recommendations limit screen time to one hour in children aged two to five years of age (www.health.gov.au).

Apart from promoting effective duration, intensity and frequency, a major issue is to find attractive types, or modes, of activity. Rates of following prescription of physical activity in adults are well comparable to those of taking prescribed pharmacological treatment, such as diuretics or other anti-hypertensive agents (11).

To a large extent, knowledge is lacking about how to increase PA in children. This seems true in both treatment and in health promotion. When hospital setting interventions are given, participation rates seem slightly higher (see for example 12). However, the majority of studied interventions are home-based or in other settings. In sub-groups such as children with cystic fibrosis (13) or childhood cancer survivors (14) the numbers of studies are yet not large enough to be convincing that interventions are efficient in promoting PA or to give directions on how to encourage patients to increase PA. The same seems true regarding obesity (15-16). Meta analyses (17-18) and systematic reviews (19-20) show small intervention effects when efforts are made in school settings or in family based interventions. To some extent, school-based interventions have been found to be more efficient than other forms (19). Beets and co-workers (21) investigated a sub-form of such school-based interventions, those focused on after-school activities, and found even stronger effects on PA-levels, fitness, body composition and blood lipids.

Conclusion

In conclusion, the effect of PA in children has been shown to be important in both primary and in secondary prevention. The reported results on the influence of PA on for example metabolic and cardiovascular risk factors are convincing, probably from an early age. However, the design of attractive interventions is the problem at hand. As in adults, children tend to be resistant to life style change, despite the fact that it would help them feel better and resist future and on-going illness. Future well-designed research, probably of a cross-discipline type, is needed to find ways to help children to a more active lifestyle.

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