2. Literature Research for the EU-funded Project:

Pain in the back: Avoiding back pain in children and teenagers

by:
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1 Introduction

Back pain is a severe health problem in nearly all industrialised nations. Children and adolescents step into the focus of medicine and public health sciences. Diverse studies in children have reported back pain prevalence rates up to 50% (e.g. Jones et al. 2004, Kovacs et al. 2003, Roth-Isigke et al. 2003, Watson et al. 2002). Although the exact prevalence of back pain in children is not known, evidence shows there is a gradual increase with age (Harreby et al. 1997, Adams et al. 1999, Salminen et al. 1995). Considering that the children and adolescents of today are the adults of tomorrow makes it necessary to gain a better knowledge about how to maintain their physical and mental health. From all of the relevant literature, one main theme appears: back pain in children is a major public health issue. Therefore, it is necessary at the outset to back education or interventions which could prevent back pain in children and adolescents.

Against this background, the European Region of the World Confederation of Physiotherapists (ER-WCPT) has been commissioned by the European Union to begin a research project entitled: “Pain in the Back: For avoiding back pain in children and teenagers”, which addresses children as a specific target group for public health intervention, across a range of health factors. The focus should be on the years when people are “forming” their lifestyles and would address both risk factors and period of risks, and protective factors with an impact on lifestyles and behaviour. The main ambition of national physiotherapist associations is to develop an intervention program focused on preventing back pain in children and adolescents that can be applied everywhere in schools and places of education, as well as promoting physical activity and back care education amongst children. This intervention has to be started as early as possible, because the number of adolescents suffering from back pain is nearly that of adults. So it is advisable to place a back specific intervention in primary schools and target children aged 6 – 11 years. Furthermore, the programme has to be within the scope of primary prevention. This means that the target group should be defined as all children in primary school and not just those children who have already experienced in back pain.

This review is the result of a literature search of several international intervention studies on this topic. The questions are:

1. Do back specific interventions prevent back pain in schoolchildren?
2. How is the effectiveness of these interventions in
   a) improving knowledge about the spine/spinal care,
   b) changing spinal care behaviour and
   c) decrease the prevalence of back pain?”

2 Background

2.1 Prevalence and risk factors of back pain in children and adolescents

“Low back pain is defined as pain and discomfort, localised below the costal margin and above the inferior gluteal folds, with or without leg pain.”
Acute low back pain is usually defined as the duration of an episode of back pain persisting for less than 6 weeks; sub-acute low back pain as back pain persisting between 6 and 12 weeks; chronic low back pain as back pain persisting for 12 weeks or more. In this guideline, recommendations are related to both acute and sub-acute low back pain unless specifically stated otherwise. Recurrent low back pain is defined as a new episode after a symptom-free period of 6 months, but not an exacerbation of chronic low back pain.

Non-specific low back pain is defined as back pain not attributed to recognisable, known specific pathology (e.g. infection, tumour, osteoporosis, ankylosing spondylitis, fracture, inflammatory process, radicular syndrome or cauda equina syndrome)."¹

The definition overhead excludes discomforts in the neck, shoulders and pelvis.

Most people experience back pain at some time in their lives, but most of the time they deal with it themselves and do not regard it as a medical problem. But of course back pain can also be the presenting symptom of serious spinal disease. There is a distinction between specific and non-specific back pain, both of which affect children as well as adults, even though research of prevalence and incidence is mainly related to non-specific symptoms. Specific back pain refers clearly to a pathological condition such as, for example, infection, cancer, fracture, osteoporosis, spondylarthritis or Cauda Equina Syndrome. Non-specific pain is recognizable with a specific pathology and accordingly cours ed as muscle soreness. According to international data about 80 - 85% of reports pertain to non-specific back pain, which applies to children as well (Gunzburg et al. 1999; Jones et al. 2005). In summary, back pain is a common link between everyday bodily symptoms, serious disease and chronic disability (Waddell, 1998). This undoubtedly means that there are cases of specific symptoms but the majority of non-specific back pain has to be accepted as an everyday occurrence, which needs to faced with a accordingly lifestyle.

2.1.1 Prevalence of non-specific back pain in children and adolescents

Data for prevalence of non-specific back pain are based usually on cross-sectional studies with self-reported back pain. According to international surveys, the prevalence of back pain ranges between 18 and 33% (three-month or one-year prevalence). One of the highest accounts of back pain in children and adolescents is shown by Roth-Isigkeit et al. (2003). This study about pain in children and adolescents localised 32.9% back pain with a three-month prevalence in 1077 children and adolescents 3-20 years old in Germany. A study by Watson et al. (2002) in 11-14 year-old schoolchildren in northwest England shows a one month prevalence of 24%. Balagué (1995) showed a one year prevalence in schoolchildren in Switzerland aged 12-17 years. And a Finnish study from Salminen (1992) confirmed a one year prevalence of low back pain of 17.6% in children 14 years of age. In adulthood, the prevalence of back pain climbs with age and concerns more females than males (Jones et al. 2005). The study Health Behaviour in School-Aged Children (HBSC), involved an international health survey from 1997/1998 and indicated self-reported back pain (at least once a week) of 11-year-old, 13-year-old and 15-year-old schoolchildren. In the 24 countries studied, more girls than boys reported backaches (19.9% versus 17.1%). Back pain increased modestly with age for both genders, from 14% and 16% for 11-year-old boys and girls to 22% and 25%, respectively, for 15-year-olds. Children and adolescents from the United States report the high-

¹European Cooperation in the field of Scientific and Technical Research (2004a): P. 6
The highest frequency, followed by the Czech Republic and Slovakia, with the remaining countries evenly distributed between 13% and 27%.

**Fig. 1 HBSC survey, 1997/1998: pupils who report a backache at least once a week (%)**

2.1.2 Risk factors

It is still unclear if back pain experienced in childhood is related to back pain in adulthood. Since it is assumed that children, who suffer from back pain become back patients as adults (Brattberg 2004), early intervention for preventing the back pain to begin with is rational. Intervention for primary prevention therefore has to take certain factors into consideration. It turns out that these factors, which are the main risk factors for back pain, have a basis in scientific research. Risk factors for back pain at young age have extensively been described, but existing studies are not applicable to for an evidence-based intervention. On the one hand, primary cross-sectional studies have been carried out, but their conclusions about associating factors cannot be interpreted as real risk factors and, on the other hand, the methodical quality of several studies is not sufficient to derive evidence from them. This lack of quality in existing studies is also criticised in the context of the development of European guidelines for prevention of low back pain 2004 (COST B13b). Also, a German review concludes that the current back pain research is not useful to have a whole appraisal with the criteria of evidence-based medicine. There is a lack of studies, which did not allow a differentiated review of risk factors and preventative actions (Roth-Isigkeit et al. 2005).

Nevertheless, there are reviews about risk factors which collect aspects that show coherences to back pain in children and adolescents. Cardon and Balgué (2004) made a systematic review about back pain

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2 WHO-Europe (2000): P. 35
risk factors in school aged children in order to the European Cooperation in the field of Scientific and Technical Research Working Group on Guidelines for Prevention in Low Back Pain (COST B13) which divides them in four groups:

1. **Lifestyle factors:**
   - Lifestyle factors are: being overweight/obesity, smoking, alcohol intake, eating habits, working, sport participation, physical inactivity and sedentary activities.

2. **Physical factors:**
   - Physical factors are: physical fitness, mobility and flexibility and muscular strength.

3. **School related factors:**
   - School-related factors have to do with backpacks and school furniture.

4. **Psychosocial factors:**
   - In this respect, the family, social environment, social recourses (e.g. good friends or benefits from parents or other adults) and emotional factors like depressions, sleeping problems, hyperactivity and and behavioural problems come to the forefront.

In conclusion, COST B 13 Working Group on Guidelines for the Prevention of Low Back Pain provides the following advices for further research:

> “**RCTs evaluating the possible positive effects of preventive programmes and risk factor modifications at young age on adult LBP are advocated.**

> From a physiological point of view, poor lifestyle habits and prolonged static sitting during school age on unadjusted furniture may play a role in the origin of LBP: further study is appropriate to determine any effectiveness of school-based interventions (exercise/sport, desks/seating, backpacks/bags).

> Further study with a follow-up into adulthood is needed to evaluate whether or not the physical cumulative load experience on the lumbar spine (e.g. from heavy book-bag carrying or sitting on unadjusted furniture) during childhood and adolescence contributes to adult LBP.”

The systematic review of risk factors for back pain in children and adolescents by Roth-Isigkeit (2005) reveals that the occurrence of back pain is multifactorial. In any respect, Roth-Isigkeit focused particularly on psychosocial and lifestyle factors. Also in this context a discussion on social disadvantage and its influence on health comes up. Working class children and adolescents who live in families with low education and low income are more predisposed to suffer from back pain than other (Roth-Isigkeit et al., 2005).

An earlier paper about the risk factors for back pain in children from Balagué et al. (1999) offered analogical outcomes. They summarised aspects like age, history of spinal trauma, family history of back pain, trunk asymmetry, increased height, female gender, competitive sports, high level of physical activity, depression and emotional or stress factors as potential risk factors. Furthermore, sitting positions and load carrying were identified as associated with back pain in children and adolescents (Balagué et al. 1999).

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3 European Cooperation in the field of Scientific and Technical Research (2004b): P. 4
3 Interventions to prevent back pain in children and adolescents

These findings reveal the lack of a scientific base for an evidence-based intervention. In this report, intervention studies are analysed, which target the prevention of back pain in children and adolescents as the primary aim in the research proposal of the project. The results shall describe the scope for preventing back pain, which possibilities can be offered on the basis of scientific findings and particularly if an evidence-based prevention programme can be created.

3.1 Review question

The main question for searching for intervention studies was:

Do specific back interventions prevent back pain in children and adolescents and what is the degree of this effectiveness in:

a) Improving knowledge about the spine/spinal care,

b) Changing spinal care behaviour and

c) Decreasing the prevalence of back pain?

To specify the search the following topics were used:

- Population: children and adolescents
- Intervention: interventions to prevent or reduce back pain with knowledge transfer related to the back, fear avoidance beliefs, behaviour
- Setting: school

3.2 Search strategy

The search for intervention studies was carried out in four steps:

1. The databases Medline/PubMed, Cochrane, Cinahl, Embase and Pedro were consulted to search for review papers.

2. Databases Medline/PubMed, Cochrane, Cinahl, Embase, and Pedro were consulted. The search strategy contained publications in English and German published between 1997 and 2007. The primary endpoint of the intervention should be to either prevent or reduce back pain. Randomised and non-randomised controlled studies were involved.

3. The relevant literature was examined to locate relevant studies.

4. Important journals relating to spinal health or children’s health, such as “Spine” or “Journal of School Health” were searched by hand.

3.3 Study selection criteria

The findings shall be scanned according to the following selection criteria:
### TABLE 1: STUDY SELECTION CRITERIA

<table>
<thead>
<tr>
<th>Selection criteria</th>
<th>Inclusion criteria</th>
<th>Exclusion criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>Children and/or adolescents</td>
<td>Adults</td>
</tr>
<tr>
<td>Intervention</td>
<td>Specific back exercises and the transfer of knowledge related to the back</td>
<td>Other interventions</td>
</tr>
<tr>
<td>Control group</td>
<td>Children and adolescents without any intervention</td>
<td>Other control groups</td>
</tr>
<tr>
<td>Outcome measure</td>
<td>back pain prevalence, motoric tests, questionnaire, observation, practical tests, technical measuring tools</td>
<td>No</td>
</tr>
<tr>
<td>Study design</td>
<td>RCT or CT or trial and observational studies</td>
<td>Other study designs</td>
</tr>
</tbody>
</table>

### 3.4 Study quality assessment

Each study shall be assessed according to the following procedure.

The hierarchy of the study shall be ascertained, 1 being the best, 5 being the lowest.

### TABLE 2: HIERARCHY OF STUDY DESIGNS FOR STUDIES OF EFFECTIVENESS

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>systematic reviews of RCT’s, experimental studies (e.g. RCT with concealed allocation)</td>
</tr>
<tr>
<td>2</td>
<td>systematic reviews of cohort studies, quasi-experimental studies (e.g. experimental study without randomisation)</td>
</tr>
<tr>
<td>3</td>
<td>systematic reviews of case-control studies, controlled observational studies (cohort studies and case control studies)</td>
</tr>
<tr>
<td>4</td>
<td>Case-series, observational studies without control groups</td>
</tr>
<tr>
<td>5</td>
<td>expert opinion</td>
</tr>
</tbody>
</table>

Only levels 1, 2 and 3 shall be looked at in this review. Levels 4 and 5 shall not be taken into consideration in this review.

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5 Center of Evidence-Based Medicine (2001): http://www.cebm.net/index.aspx?o=1025#levels
3.5 Grade of recommendation

The assessment for the practical use of the results shall be graded according to the table below:

**TABLE 3: GRADE OF EVIDENCE**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Level of evidence</th>
<th>Effectiveness</th>
<th>Test Accuracy</th>
<th>Efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1</td>
<td>High quality experimental studies without heterogeneity and with precise results</td>
<td>High quality studies with a blind comparison of test to reference standard in an appropriate population spectrum</td>
<td>High quality evaluations of important alternative interventions comparing all relevant outcomes against appropriate cost measurement, including a sensible sensitivity analysis</td>
</tr>
<tr>
<td>B</td>
<td>2/3</td>
<td>Low quality experimental studies, high quality controlled observational studies</td>
<td>Any one or two of the following: narrow population spectrum, differential use of reference standard, reference standard not blind, case control study design</td>
<td>Evaluations without relevant outcomes or without appropriate cost measurement</td>
</tr>
<tr>
<td>C</td>
<td>4</td>
<td>Low quality controlled observational studies, case series</td>
<td>Any three or more of the above</td>
<td>Evaluations without sensible sensitivity analysis</td>
</tr>
<tr>
<td>D</td>
<td>5</td>
<td>Expert opinion</td>
<td>Expert opinion</td>
<td>Expert opinion</td>
</tr>
</tbody>
</table>

Grades A, B and C shall be incorporated in the review, but grade D shall be excluded.

3.6 Results

One of the most important findings is a systematic review (Stelle et al. 2006) about “school-based intervention studies”. It is a systematic review and involved randomised and non-randomised controlled and non-controlled studies published until March 2004 with the outcome measures “spinal care knowledge”, “spinal care behaviour” and “spinal pain prevalence”. The authors judged all included studies to be weak a to their quality. Quality deficits were seen e.g. in the method of data acquisition, inconsistent results and inconsistent description of intensity or duration of the intervention. Though the results of the included studies showed positive effects for back-relating knowledge, the poor quality of the studies makes the conclusions questionable and limits the scope for recommendation of an evidence-based intervention.

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6 Center of Evidence-Based Medicine (2001): http://www.cebm.net/index.aspx?o=1025#levels
Cardon and Balagué (2004) compiled a literature review within the scope of the “COST Action B13” of the European Commission, approved for the development of European guidelines for the management of low back pain. This review was connected with a literature review about the risk factors of low back pain in schoolchildren. In this review, the authors also concluded that the existing studies focusing on interventions for preventing back pain in schoolchildren are promising but too limited regarding the wording of evidence-based guidelines. In both reviews, the authors recommended a focus on evaluation of intervention studies for further research.

Furthermore, 6 intervention studies were found and analysed (Table 4) published between April 2004 and December 2007. All the studies took place in a school setting as recommended by the WHO. There is a domination of a research group from the University of Gent in Belgium, Cardo and Geldhof et al. Surrogate parameters were often used as “back-related knowledge”, “fear-avoidance-beliefs” or “behaviour” to examine the effectiveness of intervention concerning the primary endpoint. A surrogate-parameter is frequently used in clinical studies as substitute for the real endpoint. In this case, the endpoint would be the prevalence of back pain in children and adolescents. However, for most parameters, the correlation cannot be proved and therefore its value for predicting clinical relevant endpoints is questionable (EBM-Glossar).

The studies listed in Table 4 have to some extent methodical weakness and limitations, which made evaluation difficult. Regarding content, the interventions were mostly geared to behavioural prevention with knowledge related to the back and posture, promotion of physical activity and specific back exercises. One intervention, “Bewegte Schule” (moving school) lies in the field of environmental prevention and includes the following components:

- work organisation,
- circumstantial influence and
- behavioural influence (Cardon et al. 2004).

If educational elements like back-school were chosen as an intervention (Geldhof et al. 2006), the results showed positive effects in the knowledge of the back and posture. As imparted in the intervention. In follow-up research, the persistence of this knowledge was approved so that the sustainability of the knowledge transfer seems to be given. The study which tried to control fear-avoidance beliefs (Geldhof et al. 2006) reported no significant change. Back pain was studied with the use of questionnaires containing questions for self-reported pain. The results are inconsistent and independent of the intervention focus. Therefore, school-based interventions overall show no significant impact on the prevalence of back pain. The study from Jones et al. (2007) had an older target group than the other studies and provided effective short-term treatment strategies for non-specific low back pain in adolescents. The Italian intervention study published by Negrini et al. (2004) shows no significant effect regarding backpack weight.
<table>
<thead>
<tr>
<th>Author</th>
<th>Type</th>
<th>Experimental group n=</th>
<th>Participants (intervention)</th>
<th>Intervention</th>
<th>Control group n=</th>
<th>Outcome measure</th>
<th>Results</th>
<th>Grade of evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardon et al. 2004</td>
<td>RCT</td>
<td>22</td>
<td>Children 8 years old</td>
<td>The study evaluated differences in sitting habits in the classroom between the project “Moving school” and a traditional school.</td>
<td>25</td>
<td>Potable ergonomic observation (PEO) method, accelerometer, questionnaire</td>
<td>Traditional schoolchildren spend 97% of the lesson time sitting statically. In “Moving school” the posture was replaced by dynamic sitting (53%), standing (31%) and walking around (10%). The measurement shows that the intervention group (“Moving school”) has significantly less neck and trunk rotation and the children had more physical activity in lesson. Rates of self reported back or neck pain did not differ significantly between both study groups.</td>
<td>B</td>
</tr>
<tr>
<td>Cardon et al. 2006</td>
<td>RCT</td>
<td>193 / 190</td>
<td>Children 8-12 years of age</td>
<td>A pre-post design over two years, back care knowledge, back care behaviour, fear avoidance beliefs and back pain reports were evaluated in two intervention groups: 1. back care promotion programme (six lessons with a 1-week interval) 2. promotion of back care plus physical activity promotion program (six lessons with a 1-week interval plus physical activity) and one control group.</td>
<td>172</td>
<td>Observation, questionnaire</td>
<td>Significant higher score in back related knowledge and behaviour in both intervention groups. Significant interaction effect for physical activity levels in the intervention group with physical activity.</td>
<td>B</td>
</tr>
<tr>
<td>Geldhof et al. 2006</td>
<td>RCT</td>
<td>193</td>
<td>Children 9-11 years of age</td>
<td>Multifactorial intervention: back-school-program (6 lessons, by physiotherapist, guide for teacher) and concept „Moving school“</td>
<td>172</td>
<td>Questionnaire for children</td>
<td>The intervention resulted in increased back posture knowledge for the children.</td>
<td>B</td>
</tr>
<tr>
<td>Geldhof et al. 2007</td>
<td>RCT</td>
<td>213</td>
<td>Children 9-11 years of age</td>
<td>Evaluation of teacher’s efforts to promote good body mechanics after a structured back education program</td>
<td>185</td>
<td>Interview with teachers, questionnaire for children</td>
<td>Teachers continued with initiatives to increase postural dynamism in the class when they had been instructed about that matter but it shows no additional effect on children’s knowledge.</td>
<td>B</td>
</tr>
<tr>
<td>Study</td>
<td>Design</td>
<td>Sample Size</td>
<td>Intervention Details</td>
<td>Outcomes</td>
<td></td>
<td></td>
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<tr>
<td>Jones et al. 2007</td>
<td>RCT</td>
<td>27</td>
<td>Children Ø 14.6 years of age with recurrent back pain</td>
<td>8 weeks exercise program as an intervention for recurrent non-specific low-back pain (NSLBP) in adolescents.</td>
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<td></td>
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<td></td>
<td>Pre and post intervention measures of NSLBP status (pain severity and consequences) and one week diaries of daily inactivity (time spent sitting, PC time, TV time)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>The experimental group benefited from the exercise program. It was concluded that an exercise program was an effective short-term treatment strategy for NSLBP for adolescents.</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Negrini et al. 2004</td>
<td>RCT</td>
<td>201 pupils and parents 74 teacher</td>
<td>Children 10-12 years of age</td>
<td>Established the efficacy of an educational intervention in reducing school backpack weight. Instructive meeting and written material for teachers, as well as a leaflet for parents on backpack management.</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>201 pupils and parents 50 teachers</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Measurements (height, weight, weight of the material carried in backpack, characteristics of backpack, way of carrying etc. and questionnaire)</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>The absence of a significant difference between the experimental and control group suggested that the intervention was not effective.</td>
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</tbody>
</table>
4 Discussion

Back pain in children and adolescents is a huge health problem, which is shown for instance in the increasing prevalence in international publications (e.g. Burton et al., 1996). The reasons are complex and it seems that life style factors and psycho-social factors play a major role (Roth-Isigkeit et al., 2005). The analysis of reviews and studies examining the effects of interventions for preventing back pain revealed that no evidence-based intervention can be provided. On the one hand, the epidemiology and risk factors of back pain in children and adolescents are extensively described but aspects relating to risk factors are just associated with back pain. So there is a need for robust studies regarding the risk factors for back pain. On the other hand, there are still very few studies evaluating the effects of interventions to prevent back pain or the consequences of back pain in schoolchildren. So there is a need to develop interventions with extensive evaluation.

5 Conclusion

Burton (2005) summarised the results of the COST B13 Working Group on Guidelines for the Prevention of Low Back Pain according to preventive interventions in school aged children as follows:

"The most promising approaches seem to involve physical activity/exercise and appropriate (biopsychosocial) education ..."

Based on the results mentioned above, one of the next steps has to be the development of a back specific intervention for schoolchildren. With a European-wide standardised back specific intervention in primary schoolchildren with extensive evaluation, we have a chance to contribute to narrow the research gap. Educational elements like back school seem to have a positive effect on the knowledge of the back and posture. This knowledge must be expanded and be grounded in scientific theory. It is very important to communicate the connection between the anatomy of the human body, everyday behaviour like physical activity, eating habits or psychic load and a healthy back.

It would be also important to design the back specific intervention for schoolchildren very accurate, make an enfolding evaluation and proceed one step forward to an evidence based approach. The challenge is to link the various European cultures, health systems and organisational differences in the structures of primary school education to a standardised method of data collection. On the one hand, it is important to consider the local situation and capabilities and, on the other hand, we need to collect standardised data to obtain reliable results.

The increasing prevalence of back pain in children and adolescents demands action as soon as possible. Early education is the key to promoting healthy, positive living habits, and preventing musculoskeletal disorders.

7 Bruton (2005): P. 550
6 References


Annex

1. Search method for studies and reviews
<table>
<thead>
<tr>
<th>Database</th>
<th>Step</th>
<th>Search term</th>
<th>Items</th>
<th>Reason for exclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2</td>
<td>(&quot;Education&quot;[Mesh] OR &quot;education &quot;[Subheading]) OR &quot;Primary Prevention&quot;[Mesh] OR &quot;Health Promotion&quot;[Mesh] Limits: Publication Date from 1997/01/01 to 2008/01/31, Humans, Child: 6-12 years, Adolescent: 13-18 years</td>
<td>41791 Studies 4461 Reviews</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>&quot;School&quot;[Mesh] Limits: Publication Date from 1997/01/01 to 2008/01/31, Humans, Child: 6-12 years, Adolescent: 13-18 years</td>
<td>6059 325 Reviews</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>#1 AND #2 Limits: Publication Date from 1997/01/01 to 2008/01/31, Child: 6-12 years, Adolescent: 13-18 years</td>
<td>196 Studies 14 Reviews</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>(#1) AND (#2) AND (#3) Limits: Publication Date from 1997/01/01 to 2008/01/31, Humans, Child: 6-12 years, Adolescent: 13-18 years</td>
<td>31 Studies 2 Reviews</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>#5 of title and PICO relevance</td>
<td>12 studies</td>
<td>Title and abstract not relevant for PICO</td>
</tr>
<tr>
<td>Cochrane Controlled Trials Register</td>
<td>1</td>
<td>Without doubles from PubMed</td>
<td>2 Review</td>
<td>Doubles from PubMed</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td>6 studies 2 Reviews</td>
<td></td>
</tr>
</tbody>
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