

Review of the PhD dissertation of

Linda Komínková

This dissertation focuses on the importance of Multilateral development of fundamental motor skills in children playing two sports – ice hockey and athletics. A major question and hypothesis is that children with a *higher level of multilateral development acquire specific sport skills faster and more easily than children with a lower level of multilateral development*. This is examined by a 1-year follow-up of 6-7 yr old children.

My comments and questions related to various sections of the dissertation are below along with a concluding recommendation.

### **Introduction**

The opening states that “sport and physical education is a significant source of physical activity for children and youth (Baker, 2003). Children practically do not engage in spontaneous physical activities.” I tend to agree but think this could be better supported by references. Some work showing the % time that sport and PE contribute to overall daily activity. Also in the seconding paragraph, our their data for European children instead of using US children?

There is also discussion of sport specialization and I think this could be supported by position papers on the topic.

Multilateral development is only mentioned at the end of the introduction but is a major tenet of this dissertation. The lead up is good but I think a bit more on what is multilateral development would be beneficial here – even 2 more sentences with definition and some insight into key variables before the sentence stating its association with injury, etc.

See work of Arne Gullich on progression within football club - <https://pubmed.ncbi.nlm.nih.gov/24245783/>

### **Section 3 Research Problem**

I think the rationale and argument for why the linkage between multilateral development and sport-skill acquisition. There continues to be focus on LTAD and specialization and lack of longitudinal study but not enough on the linkage between multilateral development and sport-skill acquisition.

## **Methods**

Participants: Can any more information/detail be provided about the “competitive level” of the clubs?

Athletics: Long jump, Overarm throw, and 50 m sprint.

The test of 50 m is explained as being more technical (e.g., the running speed is significantly affected by the running technique.); however, there is no reference to support this claim.

## **RESULTS**

N=95 hockey; 54 follow-up

N=77 athletics; 31

Table 10 shows the anthropometric measures of those who participated only in phase I (so the drop outs) but were there differences in multi-lateral values between drop outs and those included in phase II analysis?

### **5.2 Multi-lateral development**

It would be helpful to provide the descriptive statistics first --- before the correlations

It would be helpful to show the correlations for all (Table 15) first then sport specific since one of the arguments being made is for GMA

In Table 20 suggest showing the level of significance from Table 19 along with eta squared from table 21 for ease of understanding the data – all information in one place rather than 3 separate tables

What about controlling for gender? Even though a small number of girls there is a difference between sport groups. Although usually not large differences between boys and girls at this age, there is still slight difference which may influence results – especially because more girls in the athletics group. See next section

Section 5.2.3 Suggest indicating the number of boys and girls (n= ) to remind the reader

## **Discussion**

For the discussion, I think a major finding is that the data for Multi-lateral development does not support the concept of GMA

Would suggest more comment on long jump (lower body power) and skating performance, as this appears to be a key finding. I think Bracko has done some work here.

I think the Flag tag game is also more than decision making as it involves a combination of several of the fundamental skills/capacities like speed, balance, etc.

My biggest criticism of this dissertation is the use of the tests for sport-specific skills for athleticism. I think these could clearly be included in the general multi-lateral abilities. In fact,

jumping is included in both, and the sprint was being considered for phase I (multi-lateral development). And there is no wonder why correlation is higher in athletics than hockey. However, you do allude to the factor of greater non-specificity of skills.

I think you need to be careful with this statement as well – “children with a higher level of multilateral development acquire specific sports skills more efficiently than children with a lower level of multilateral development.” You only measured the product not the process which is how they ‘acquire’ skills – motor development. You measured motor performance. But it is good to see the mention of it in the limitations.

I am also glad to see my other concern about the duration of the ‘longitudinal’ study period being addressed in the limitation. Yes, to truly observe this question it would be good to see a multi-year follow-up.

**Recommendation: I, Dr. Joe Eisenmann, recommend awarding a PhD degree to the doctoral student, Linda Komínková, on the basis of the submitted work.**