

PEER REVIEW HISTORY

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ARTICLE DETAILS

TITLE (PROVISIONAL)	The role of body mass category in the development of faulty postures in school age children from a rural area in south-eastern Poland – a cross-sectional study
AUTHORS	Rusek, Wojciech; Leszczak, Justyna; Baran, Joanna; Adamczyk, Marzena; Weres, Aneta; Baran, Rafał; Inglot, Grzegorz; Czenczek-Lewandowska, Ewelina; Porada, Sławomir; Pop, Teresa

VERSION 1 – REVIEW

REVIEWER	Gabriel Gijon-Nogueron University of Malaga(Spain)
REVIEW RETURNED	31-Mar-2019

GENERAL COMMENTS	<p>Dear authors:</p> <p>It has been a pleasure to review your paper about “The role of body mass category in the development of faulty postures in school age children from rural areas” but I have observed a few of methodology errors that it’s necessary to change before to be accept it</p> <p>You can see below the recommendation</p> <p>In section limitation It’s possible that other element can influence in this measure, like a laxity, other muscular problem, what do you think? Include this in this section</p> <p>In section method The exclusion criteria are very limited because if they had some surgery or muscular problem in the 6 before months they could influence the result. Can you review it?</p> <p>If the inclusion criteria are to have the consent of the parents, can not be in the exclusion criteria to lack of consent of the parents and children</p> <p>Please explain better the process of measure with the zebris system and what is the reference of the protocol used</p> <p>How did you calculate the sample size, can you include this in the text?</p> <p>Result Table 4 I think that it is a mistake, you write 341 participants with normal BMI and in the rest of the tables 342. Please, can you check it?</p>
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	Discussion Can you include a clinical implication in this section?
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REVIEWER	M ^a del Pilar Alfageme García Universidad de Extremadura España Ciencias de salud Podiatría
REVIEW RETURNED	10-Apr-2019

GENERAL COMMENTS	After reviewing the study I think the authors should briefly explain in introduction the Zebris method and in better presenting each table with its correct explanation.
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REVIEWER	Javad Harati Hakim Sabzevari University, Iran.
REVIEW RETURNED	21-May-2019

GENERAL COMMENTS	The paper is well written but there is no novelty regarding the funding which could make the study suitable for publication in such a well-established journal. Similar studies have long been proven this issue. I can not accept this paper as a novel and creative work although it has been written well.
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REVIEWER	Xavier García Massó University of Valencia, Spain.
REVIEW RETURNED	03-Jun-2019

GENERAL COMMENTS	<p>The manuscript "The role of body mass category in the development of faulty postures in school age children from rural areas" address an interesting research topic. Nevertheless, there are several major flaws that reduces the potential impact of this manuscript on the scientific community.</p> <ol style="list-style-type: none"> 1. The contents in the introduction were too vague and too short in describing the issues and significance of the study. The paper should start with a more thorough background literature section to provide a more convincing argument on the significance of the study. In the current version, there are not enough justification to perform the study. Moreover, there are a lot of sentences that need some reference to support it (e.g., first two sentences of the introduction section). 2. The objective is vague. Please be more specific. What is "incidence of abnormalities in selected parameters measured in trunk area"? Did you measured incidence? 3. Body posture section: this section should be improved. After read it, I don't understand how the system works and which variables were included in the analysis. Maybe a figure in which body posture variables are showed could clarify it. 4. How participants and educational centers were selected? What about exclusion criteria? 5. Statistical analysis and results should be revised. First, in statistical analysis relationship between age and body posture are not explored but it is showed in results. Moreover, you have not justify the interests of this relationship in the introduction and objectives of the study. Secondly, you confound statistical test which try to find relationships between quantitative variables with those that analyze differences between groups. Overall, the statistical tests used seems appropriate but the way in which the
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	<p>results are provided is very confusing (e.g., Mann Whitney test were performed but they are missing in the results).</p> <p>6. Page 8; lines 5 to 20: this table are not well positioned.</p> <p>7. Conclusions of the study should be more specific (as objectives).</p>
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VERSION 1 – AUTHOR RESPONSE

Reviewer: 1

In section limitation

It's possible that other element can influence in this measure, like a laxity, other muscular problem, what do you think? Include this in this section

The authors agree that other elements can influence on this measure like a muscular problems i.e neonatal hypertonia or hypotonia and their consequences in childhood, past injuries and chronic neurological diseases. When we prepared the design of the study we took these factors into account. Children with such problems were excluded from the study, so we added this information to the “exclusion criteria” on p. 5. In the “limitation section” on p. 3 we wrote that “Other elements can influence on the trunk muscle tension like muscular problems i.e neonatal hypertonia or hypotonia and their consequences in childhood, past injuries and chronic neurological diseases and they should be take into account in the future studies”.

In section method

The exclusion criteria are very limited because if they had some surgery or muscular problem in the 6 before months they could influence the result. Can you review it?

Detailed information in the section “exclusion criteria” was added. “Children with diagnosis of neonatal hypertonia or hypotonia, chronic neurological diseases or past injuries and surgical interventions during the last 6 months before examination were excluded from the study group”.

If the inclusion criteria are to have the consent of the parents, can not be in the exclusion criteria to lack of consent of the parents and children

As recommended by the reviewer “the lack of consent of the parents and children” was delete from the “exclusion criteria”.

Please explain better the process of measure with the zebris system and what is the reference of the protocol used

The authors added a detailed description of the Zebris method in the introduction and method sections with a sources and figures 1, 2 and 3.

How did you calculate the sample size, can you include this in the text?

In the opinion of the authors the required minimum sample size has been achieved. The sample size was calculated with reference to the total number of children (n= 3790) living in the rural area in the analysed region, with a 95% confidence level and a confidence interval of 0.05. It was calculated that the minimum sample size should be 349 and we examined 464 children. The information was added in the Material and Method, Participants section.

Result

Table 4. I think that it is a mistake, you write 341 participants with normal BMI and in the rest of the tables 342. Please, can you check it?

The number 342 is correct. The mistake has been proved in the table 4.

Discussion

Can you include a clinical implication in this section?

At the end of the discussion the authors added information about clinical implication. At page 13 we wrote that: "The results of the examinations made it possible to increase awareness among parents and primary school teachers related to the important role of body weight in a child's development, including the effects of this factor in body posture. Following the study, headmasters of the relevant schools initiated cooperation with a Rehabilitation Centre offering specialist consultations and optional corrective exercise programs for children with postural defects".

Reviewer: 2

After reviewing the study I think the authors should briefly explain in introduction the Zebris method and in better presenting each table with its correct explanation.

The authors added a description of the Zebris method in the introduction and method sections with a sources.

Reviewer: 3

The paper is well written but there is no novelty regarding the funding which could make the study suitable for publication in such a well-established journal. Similar studies have long been proven this issue. I can not accept this paper as a novel and creative work although it has been written well.

The authors are grateful for the comments. We would like to emphasize the value of the presented results as well as the interesting topic, which is a valuable addition to the clinical implication. The strength of the research is the origin of the study group because all of the children live only in rural areas. Data about this topic are less available in the current literature.

Reviewer: 4

- 1. The contents in the introduction were too vague and too short in describing the issues and significance of the study. The paper should start with a more thorough background literature section to provide a more convincing argument on the significance of the study. In the current version, there are not enough justification to perform the study. Moreover, there are a lot of sentences that**

need some reference to support it (e.g., first two sentences of the introduction section).

Introduction has been improved. We added a new paragraph with current resources: "According to the data reported in the literature, the rate of overweight and obesity in children is consistently increasing. A similar situation is observed in the case of postural defects. In previously conducted studies numerous authors have investigated factors affecting obesity or postural defects, usually however, focusing on these problems separately. There are no studies which would link these two aspects to each other. Additionally, majority of the reports are related to children from urban areas, more affected by globalisation, and those from highly developed countries where children more commonly present musculoskeletal disorders related to incorrect body posture. On the other hand, it would be worthwhile to carry out related research focusing on rural areas where children grow up in more natural environments, have more opportunities for outdoors activity, and better access to healthy food, yet they are also frequently affected by the two problems".

2. The objective is vague. Please be more specific. What is "incidence of abnormalities in selected parameters measured in trunk area"? Did you measured incidence?

The aim of the study has been changed and now it is more specific:

"The aim of the study was to assess a relationship between Body Mass Index and abnormalities in the trunk area i.e. shoulder distance from the frontal plane, shoulder position and pelvis position in children living in the rural area" (p.4).

3. Body posture section: this section should be improved. After read it, I don't understand how the system works and which variables were included in the analysis. Maybe a figure in which body posture variables are showed could clarify it.

Body posture section has been improved by adding a detailed information about Zebris system with a figure 1 which illustrates the description of the topographic points marked on the body of the patients. (Based on the defined topographic points, the software computes the values of selected body posture parameters). What's more, we added a figure 2 i 3 which shows the parameters of body posture analysed in the paper. In the presented study the following were taken into account in the assessment of the posture: in the sagittal projection: the difference in the distance of the scapula (SDD in mm) (Fig.2), in the frontal projection: pelvic height difference (PHD in mm) and shoulder height difference (SHD in mm) (Fig.3).

4. How participants and educational centers were selected? What about exclusion criteria?

Five primary and secondary schools were randomly selected out of the nine schools located in the specific rural region in south-eastern area of the country in which the study was conducted. All the relevant headmasters agreed for their schools to participate in the scientific study.

The exclusion criteria have been supplemented in method section on p. 5.

- 5. Statistical analysis and results should be revised. First, in statistical analysis relationship between age and body posture are not explored but it is showed in results. Moreover, you have not justify the interests of this relationship in the introduction and objectives of the study. Secondly, you confound statistical test which try to find relationships between quantitative variables with those that analyze differences between groups. Overall, the statistical tests used seems appropriate but the way in which the results are provided is very confusing (e.g., Mann Whitney test were performed but they are missing in the results).**

Due to the fact that the relationship between body weight and age was not the aim of the presented study, Table No. 2 (association of BMI and age of subjects) has been removed. Additionally, information about Mann Whitney's test was removed from the methodology, because it was used for other calculations that were not the aim of the presented study.

- 6. Page 8; lines 5 to 20: this table are not well positioned.**

Position of the table 3 with the description has been changed.

- 7. Conclusions of the study should be more specific (as objectives).**

Conclusions has been improved (as an objective) and now is more specific: "Increase in children's BMI produces adverse effects in the position of shoulder blades, reflected by their greater distance from the frontal plane. Increase in BMI is not significantly related to the position of shoulder joints or pelvis, however the subjects with overweight or obesity presented a greater difference in the position of shoulder joints and pelvis".

The authors would like to express their gratitude to the members of the Editorial Staff for their effort connected with preparing the reviews and are looking forward to obtaining a final decision regarding publication of the article in "BMJ Open".

VERSION 2 – REVIEW

REVIEWER	Gabriel Gijon-Nogueron University of Malaga Spain
REVIEW RETURNED	30-Jun-2019

GENERAL COMMENTS	The authors have done all the changes that I suggested and it improved the paper. In this moment the paper could be accept
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