

Peer Review File

Article information: <http://dx.doi.org/10.21037/jxym-21-19>

Comment 1: The study uses the sex-matched technique in selecting participants, so is there any effect found considering gender? Recommended to show in supplementary data if possible?

Reply 1: Yes, we also found noticeable men-women differences in all the outcomes. Therefore, we used sex-specific cut-off points as the references (derived from normal weight group) for the balance and gait characteristics to determine the outcomes as lower or higher (abnormally). We have added some new data in the Table 2. We used Mann-Whitney U tests to see the men-women differences within groups.

Changes in the text: Please see Page 17 Table no. 2.

Comment 2: Line 18: Since the authors are focusing on adults in their study, there is no reason to mention children as a part of the background.

Reply 2: We have modified our text as advised (please see Page 2, Line 30).

Changes in the text: "Obesity decreases balance capacity and impairs gait quality of an individual, mostly the older ones."

Comment 3: Lines 27-30: The authors should clarify for whom these variables were lower. Or, are they examining minimum values as dependent variables? This is unclear.

Reply 3: We have modified our text as advised (please see Page 2, Lines 38-42).

Changes in the text: "The outcomes were the lower forward balance and step length, and higher step width and foot angle for those who (for both groups) had respective values $<\text{mean}-1\text{SD}$ and $>\text{mean}+1\text{SD}$, respectively, compared to the sex-specific cut-off points as the references ($\geq\text{mean}-1\text{SD}$ and $\leq\text{mean}+1\text{SD}$, respectively) derived from normal weight participants."

Comment 4: Line 50: What do the authors mean by “gait rhythm?” Are they referring to coordinative patterns?

Reply 4: Yes, we meant that. We have modified our text (please see Page 3, Lines 57-58).

Changes in the text: “These altered biomechanics causes postural instability, and ultimately leads to improper balancing capacity as well as discoordination in the gait patterns.”

Comment 5: Did any of the adults with obesity have chronic conditions (e.g., type 2 diabetes)?

Reply 5: No, not at all. We also excluded type 2 diabetic subjects. We have added the following new text (please see Page 4, Lines 86-87).

Changes in the text: “Conversely, those who had a history of chronic conditions (such as musculoskeletal disorders and type-II diabetes mellitus), neurological disorders (such as.....”

Comment 6: Was waist circumference or leg length measured?

Reply 6: No, these weren’t measured.

Changes in the text: N/A.

Comment 7: Lines 112-124: Is there a reason that the full Berg Balance Scale was not administered (i.e., only the functional reach task)?

Reply 7: Yes, there were few unfavorable reasons. We needed to consider the feasibility of conducting this study as it was a self-funding student work. Administration of full Berg Balance Scale requires some other additional equipment such as 1 ruler, 2 standard chairs (1 with arm rests and another without), a footstool or step, a 15 ft walkway etc. There were a few potential limitations to arrange these full settings as it wasn’t also a specific center-based study.

Changes in the text: N/A.

Comment 8: I presume that all of the participants had relatively straight walking paths. This is important to consider as it might affect gait calculations.

Reply 8: Yes, right you are. The walking line of progression was a straightway. We carefully considered it.

Changes in the text: N/A.

Comment 9: Line 143: Instead of “a naked eye observation,” I think that clinical assessment might be better to use.

Reply 9: We have modified our text as advised (please see Page 5, Line 137).

Changes in the text: “A clinical assessment of visual observation method was used to evaluate the pattern of gait.....”

Comment 10: Line 148: What do the authors mean by “reference values”? Are these means?

Reply 10: We meant cut-off points as the references. We have modified our text (please see Page 5, Line 141-143).

Changes in the text: “.....the sex-specific cut-off points were determined for the forward balance, step length, step width, and foot angle using respective mean \pm 1SD from the normal weight participants as the respective references.....”

Comment 11: The findings from the current study confirm many studies finding a relationship between obesity, gait, and balance in young adults. The authors should discuss if there are particular factors in Bangladesh that make these findings unique. In other words, how does this study add to the existing literature on obesity, gait, and balance?

Reply 11: We have newly added some data (please see Page 9, Line 250-259).

Changes in the text: “Moreover, the finding of this study potentially reflects that the early young adult individuals aged below 30 years possess the highest level of balance capacity. Woman sex has clearly poorer balance and spatio-temporal gait characteristics, therefore, it is rational and highly recommended to consider the sex-specific cut-off points of lower forward

balance, lower step length, higher step width and higher foot angle as the references when further designing the relevant studies. Certain occupations have a negative impact on balance and gait, mostly the business ownership. Employees and housewives are also more prone to have poorer gait characteristics. Almost all of the obese individuals may have any of the gait abnormalities. These sorts of findings will enrich the existing literature in the light of exploring the new information from this Bangladeshi study.”