Reviewer’s report

Title: Anthropometric, physiological characteristics and rugby-specific game skills of schoolboy players of different age categories and playing standards

Version: 0 Date: 26 Oct 2019

Reviewer: Shannon Siegel

Reviewer's report:

General comments
This Ms is very interesting and provides insight into the differences in U16 and U19 Zimbabwean Rugby Union players by age category, playing level, and relative to a non-rugby control group of athletes. There is a ton of information in this article, and the authors did a good job of assessing the independent and interactive effects of the designated groups. That said, there is so much information here, and the appendices contain even more detail, that keeping track of all of the pieces can be difficult.

Specific comments
As I said in the general comments, overall, I like the article, and I think it was a huge undertaking. Due to all of the moving pieces, I sometimes found it difficult to track all of the parts, and I wonder if it can be broken into two papers. I also am not a fan of pulling virtually all of the methods section into an appendix; some of the topics need to be at least reported in the methods so the reader knows what the variables are and how they were collected. I also recommend reporting technical error of measurement with skinfolds. In general, 'the' needs to be added to text in front of U16, and U19, e.g., page 3, line 11 attainment of elite status at the U16 or U19 level. Many commas are missing that would clarify the sentences.

See below for page and line specific comments.

Abstract
Page 2, line 21, age-categories
Page 3, line 1, 'skinfolds developed with age', change word phrasing, improved with age
Same line, comma after age
Conclusion is passive tense, change to active

Background
Et al., needs periods and commas throughout.
Page 4, line 7, sprinting and tackling
Line 10, possessive on players'
Line 14, the complex interaction of a number of factors
Line 17, the combined effect of age…
Line 22, not develop for some of the physiological characteristics, rather, improve or increase
Page 5, line 26, U16s, but not for speed and agility.
Line 29, comma after age-categories
Line 29, did all of these students (refs 1-9) truly assess maturity-related factors? I would argue that only 1, or possibly 2 did so. In addition, one of the studies was more longitudinal in nature, yet you called all of them cross-sectional in line 28.
Line 47, controversial or conflicting?
Line 49, comma before whilst
Line 50, and before aerobic
Page 6, line 55, at a distinct age category
Line 57, comma after exposures [23],
Line 66-69, this sentence is very awkward and needs to be rephrased as the meaning is lost.
Line 70, the current study instead of this study

Methods
As I said above, I would prefer to see some of the info from the appendix here, particularly as you assessed maturity offset (Mirwald et al. prediction equation), yet do not really mention it until the results.
Page 7, Line 94, highs schools
Line 98, than rugby
Line 101, comma after players, respectively.

Procedure
Page 8, line 106, who partook
Line 109 comma after are instead of semi-colon
Typical error of measurement on anthropometry measures?
Line 114, seven-site skinfold measurements
Line 122 the 60s pushup test
Page 9, line 136, This timing ensured…
Lines 140-143, words missing: Testing occurred on natural grass pitch in the school field and the gymnasium was used for strength- and power- based tests. Participants were requested to continue with their normal diet and refrain from caffeine and performance enhancers during the testing period.

Statistical analyses
Page 10, Line 153, Scheffé
Line 156, All analyses were conducted…

Results
Line 161, …within the U16 age category…

Tables and figures
All tables are very busy
Page 11, Table 1, align decimals, and fix YPHV column for U16 sub-elite. Table is very busy.
Page 13, Table 2, align decimals
Page 15, line 199, had a significant…
Page 16, Table 3, fix spacing on table
Page 18, Line 227, not all significant, perhaps this should be noted here.
Line 231, Text says non-rugby players showed the largest mean difference, but Figure 5 shows that the statistic is for elite RU players.
Page 19, Table 4, spacing is tight.
Figure 1- legend for age categories is missing. I also recommend placing an asterisk next to significant differences on the figures.
Figure 2 and text on page 18 say \( \eta^2 \ p=0.31 \), but Table 4 says 0.26. Which?
Figure 4, at the U16 level and at the U19 level, and star significant differences
Figure 5, check text on page 18 for consistency.
Discussion
Page 20, Line 254, make sure variables are in the same order of reporting throughout paper
Line 264, adolescent period
Line 264, commas before and after on average
Line 267, post puberty
Page 21, line 277 a combination of the two
Line 281, comma after levels
Line 285, compared to instead of than
Line 291, This outcome suggests…
And I would be cautious with the phrasing of this sentence.
Line 296, In contrast with the study hypothesis
Line 300, spell out Rugby League at first use.
Page 22, comma after rugby [11],
Line 304, word missing, various body sizes and shapes?
Line 306, comma after players
Line 311, comma after rugby
Line 313, possibly rugby playing levels or standards instead of players?
Line 321-322, this sentence does not make sense
Line 323, what is the 505 test? Possibly a short explanation for those who do not know?
Page 23, line 330-331, this sentence is confusing, please re-phrase
Line 342, comma after players,
Line 343-344, comma before and after respectively
Line 349, heavier back squats instead of higher back squat scores?
Line 350, results indicate
Line 352, comma after measures
Line 353, comma after league
Page 24, line 357-359, awkward sentence, rephrase.
Line 360, Few studies
Line 365, compared to instead of than
Line 371, the current study
Line 375-377, rephrase sentence: However, with the higher level of proficiency expected in elite rugby and the important role of passing in rugby, it is possible to speculate that enhanced training of pass execution in elite competition is emphasised more than in sub-elite resulting in better passing ability.
Line 395-398, sentence is confusing. Re-phrase
Line 399, at the U16 level
Line 410, comma after cricket, at instead of on
Page 26, line 419 missing word, are unclear?
Line 419-422, sentence needs to be re-phrased, difficult to follow
Line 423, the possibility
Page 27, line 463, This sample, This selection
Page 28, line 484, data are

References
Be consistent with style sheet, Index Medicus or not

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.
No

**Does the work include the necessary controls?**
If not, please specify which controls are required in your comments to the authors.

Yes

**Are the conclusions drawn adequately supported by the data shown?**
If not, please explain in your comments to the authors.

Yes

**Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?**
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

**Quality of written English**
Please indicate the quality of language in the manuscript:

Acceptable

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