Reviewer’s report

Title: Effects of a blocked versus an alternated sequence of balance and plyometric training on physical performance in youth soccer players

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Reviewer: Jon Oliver

Reviewer's report:

The authors present an interesting paper examining the effects of short-term periodization of balance and plyometric training on physical performance in young football players. The findings are novel, the paper is well-written and the findings have both practical and scientific merit. There are a few areas where the paper could be enhanced further.

Introduction

In the introduction (and discussion) it is not clear why you are hypothesising that an alternated approach would be more beneficial than a blocked approach. I think it is important to give the reader some basis for your hypothesis.

Methods

I think it would be better to give the final sample size (of n = 17) here rather than leaving this until the results, as it creates a bit of an anti-climax. I think the methods can state the initial recruited sample and the final sample size to set the expectations for the reader early on.

Statistical analysis

I'm not sure why you have the univariate analysis for baseline comparisons. Post-hoc testing of your 2*2 ANOVA in SPSS would give you the baseline comparison (although in SPSS you do have to paste in extra commands to get all comparisons).

You refer to a Bonferroni correction. If all of your comparisons are 2*2 then there would be no corrections as there are never more than two means to compare (this can be confirmed from the SPSS output, as it will state if the Bonferroni correction has not been applied).
Results (and discussion)

I would be careful with the use of the term "significantly larger" when comparing blocked and alternating interventions. If responses to the two interventions are significantly different that would be reflected in a significant interaction effect. If the difference in responses was "larger" that would be reflected in an effect size that compares the effect of one intervention above the other intervention and shows a large (d > 0.8 effect). That may be the case but I think your effect size comparison are within-each group, rather than comparing the effect of block training over and above the effect of alternated training.

Discussion

There is no mention of maturity in your paper and this is relevant for the population examined. In not referring to maturity I think you underplay your findings. Based on your maturity offset you have a population in the middle of their growth spurt, a time when youth might experience adolescent awkwardness and when some injuries in soccer increase. I think showing that players in their growth spurt can respond to training is noteworthy.

You include no limitations. An obvious limitation is the sample size, which will have influenced your statistical power and ability to detect significance. I think that should be acknowledged. It could be argued that effect sizes are more important, yet in your discussion and conclusion you never really refer to the often large effects that you observed. Instead you just focus on significance. Again, I think this imbalance partly underplays the importance of some of your findings.

**Are the methods appropriate and well described?**
If not, please specify what is required in your comments to the authors.

Yes

**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

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