

**Response to Opponent's Report on PhD thesis “*The performance enhancement of professional weightlifters and treatment of patella tendinopathy in competitive sports athletes*”**

Dear Dr. habil. Krisztián ANDOR,

Thank you for your report for my PhD thesis, entitled “*The performance enhancement of professional weightlifters and treatment of patella tendinopathy in competitive sports athletes*”. The suggestions offered by the reviewer has been immensely helpful, and we also appreciate your insightful comments on the topic, formal, style, methods, results, publications, thesis points, and specific questions.

After receiving your report, I immediately read them carefully and thought deeply about your question. Your comments and opinions are a huge help for my follow-up in-depth research, thank you for your continued interest in my research. According with your comments, we systematically summarized the applications of the combined barycenter theory. Your question was answered below.

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## **Specific questions**

- 1. What other application do you see where the combined barycenter theory can be used?*

**Answer:** The “combination barycenter” is derived from the calculation of the center of gravity of combined objects in physics. In my thesis, we discussed the factors of the forward falling of failed attempts based on the human body & bar combination barycenter. In the future research, we plan to study the factors of the backward falling of failed attempts by the combined barycenter theory, and further explain the reasons for the failure of snatch.

With the development of computer technology, the calculation of combination barycenter became easier and more accurate. The combined barycenter theory has in-depth research and extensive applications in mechanical design, architectural design, ship design, aircraft design and other fields. For example, the combined barycenter is used to analyze the deformation of ancient pagoda, which is used to protect the historical buildings. By analyzing the combined barycenter of the seat and the pilot, the stability of the ejection seat after being ejected from the cabin is studied. The dynamic unbalance problem of the ship propeller is designed by using the combined barycenter during the blade rotation. By analyzing the force characteristics of the combined barycenter of the outriggers of truck crane, the position of the boom is designed. By studying the force characteristics of the combined barycenter of the complete system of the concrete pump truck, overturning is prevented.