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4 **Title: Response to the comment on “A New Taxonomy for Post-activation
5 Potentiation in Sport”**

6 **Running head:** Response

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34 We thank Dr. Smith and Professor MacIntosh for the opportunity to further
35 discuss the implications of the new proposed taxonomy. In their letter,¹ they claim that
36 the definition they propose is in contrast with that cited in our article,² and argue that
37 while their definition does not stipulate a mechanism, our definition does so. Honestly,
38 we find it challenging to distinguish between the two definitions.^{1,2} When comparing
39 the terminology, we see quite similar nomenclature and no mechanisms proposed.
40 Furthermore, our definition does not differ substantially from prior classical
41 definitions.³

42
43 Smith and MacIntosh state: “This is an important point because Boulosa and
44 colleagues justify their commentary based on assumed mechanisms.”¹ However, it is
45 ubiquitously agreed since the pioneering works in the 80’s that the mechanisms for PAP
46 are well established. In fact, Professor MacIntosh’s own impressive work has helped to
47 define these mechanisms.^{4,5} Hence, the literature consistently agrees upon the
48 mechanisms of PAP over the last 30 years.

49
50 On another point, Smith and MacIntosh state: “Twitch potentiation dissipates
51 over the ~6 min period immediately after a conditioning contraction.⁵ For this reason,
52 any enhancement of performance or contractile response outside of this time cannot be
53 attributed to PAP.”¹ However, the time course of PAP is not as static as Smith and
54 MacIntosh propose, with examples in literature of PAP recorded >6 min after the
55 conditioning activity.^{2,6}

56
57 Smith and MacIntosh continue: “However, it is important to realize that PAP is
58 not limited to isometric twitch contractions and that PAP of other contraction types
59 could theoretically contribute to PAPE if the effects coincide temporally.”¹ In our article
60 we agreed with this statement.² Our contention was that voluntary contractions have a
61 lower signal-to-noise ratio, making it more difficult to detect voluntary changes
62 associated with PAP.

63
64 It is interesting that Smith and MacIntosh indicate that there should only be two
65 descriptors (PAP and PAPE) and there is no possibility for alternative terminologies.
66 The proposed taxonomy highlights the conditioning activity, testing activity and
67 population, factors causally related to the onset and magnitude of potentiation effects.
68 For instance, the rationale for a lack of increased voluntary performance would be more
69 apparent in the case of the following descriptor: “Post low intensity squats jump
70 potentiation in sedentary males.” In this case, the conditioning activity and population
71 are less likely to induce and experience potentiation, respectively. There is no reason
72 that more general descriptors such as PAP and PAPE cannot co-exist with our proposed
73 taxonomy, as we clearly stated in our article.²

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