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Letter to the Editor concerning “The role of non-rigid cervical collar in pain relief and functional restoration after whiplash injury: a systematic review and a pooled analysis of randomized controlled trials” by Ricciardi L, et al. (Eur Spine J; [2019] 28:1821–1828)

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**Letter to the editor concerning “The role of non-rigid cervical collar in pain relief and functional restoration after whiplash injury - a systematic review and a pooled analysis of randomized controlled trials”**

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**Declarations**

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We read with interest the systematic review by Ricciardi et al. [1] on the effect of non-rigid cervical collar (nRCC) in the rehabilitation of whiplash injury. The conclusion of their review favors an active “non-immobilization” approach [1], in line with most literature on the topic. However, after reading the review, we do have some methodological concerns that could have significant impact on the interpretation of the findings.

The authors aim to investigate if wearing a nRCC improves pain and cervical range of motion (ROM) more than not wearing an nRCC [1]. However, the review included four papers based on two RCT’s (Schnabel et al. [2]; Vassiliou et al. [3]; McKinney et al. [4]; McKinney [5]), which either equipped all participants, including the “non-immobilization” group, with a nRCC or allowed for it to be used in the first days after the injury. As all participants had access to and potentially used a nRCC, these studies are not appropriate to use to investigate the research aim of the systematic review. In addition, the included study by Kongsted et al. [6] clearly stated that they had used a “*semirigid Philadelphia neck collar*” and not a nRCC. This study is therefore not appropriate for the specific review aim either.

For the pooled data on the pain VAS scores, two papers (Schnabel et al. [2]; Vassiliou et al. [3]) included in the review seem to be based on the same patient population, although they are reported as two separate studies for the time interval “VAS t<3 m” [1]. Furthermore, Ricciardi et al. [1] displays VAS data as means and SD in a table in the review while the exact same values are presented as mean and SEM in the original papers from Mealy et al. [7] and Borchgrevink et al. [8]. Similarly, the ROM data from Mealy et al. [7] is also presented in the review [1] as mean and SD while the original paper has reported these values as mean and SEM.

Regarding ROM, the authors define this as “...*the degree of mean lateral flexion of the neck*” [1] in line with what is reported in the paper by McKinney et al. [4]. However, Mealy et al. [7] reports “*Total cervical movement-that is, flexion, extension, right and left lateral flexion, and right and left rotation-was calculated, giving a numerical score.*” which is not mentioned in the review [1].

Taken together, these methodological concerns of the review by Ricciardi et al. [1] may have a direct impact on the interpretation of the findings.

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