

# Nonspecific lower back pain in overhead athletes is multifactorial and is not solely determined by the type and intensity of the sport

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We read with interest the article by Moatshe et al. on a cross-sectional study of the prevalence and risk factors of nonspecific low back pain (NSLBP) in amateur athletes who regularly participate in sports involving repetitive overhead movements.<sup>[1]</sup> Among the 52 patients examined, the prevalence of NSLBP was 25%; 48% had scapular dyskinesia; and 40% had limited flexibility of the latissimus dorsi.<sup>[1]</sup>

The study is interesting, but some points should be discussed. The first point is that the origin of NSLBP is not limited to the lumbar spine but is multifocal. NSLBP can originate not only from muscles, joint capsules, tendons, ligaments, and cartilage, but also from other tissues and structures equipped with nociceptors. These include the kidneys, ureters, arteries, bladder, prostate, uterus, ovaries, and adnexa.<sup>[2]</sup> It is therefore important to include all these tissues in the differential diagnosis of NSLBP. It is equally important to include dehydration, chronic infections, endometriosis, electrolyte imbalances, endocrine disorders, chronic renal failure, and stones in the differential diagnosis.

The second point is that NSLBP can be triggered not only by sporting activities, but also by everyday activities. It is therefore important to know the type and intensity of the work performed by the test subjects and what other activities they engage in besides sports when they are not working. A person building a house or renovating their apartment is more likely to develop NSLBP than someone whose hobby is playing chess. A person with a sedentary job is less likely to develop NSLBP than a person who works as a construction worker, blacksmith, or carpenter.

The third point is that NSLBP may also be due to side effects of the current medication or diet that a subject takes regularly. Therefore, it is important to include diet and current medication in the analysis. How many of the included participants regularly or occasionally took analgesics, sedatives, hypnotics, antidepressants, or antiepileptics, and how many of them were on a specific diet (e.g., low-carbohydrate, anaplerotic, ketogenic, low-fat, vegetarian, vegan, etc.)? How many of the participants used illegal drugs?

The fourth point is that the prevalence of NSLBP may also depend on the type of overhead sports. Since slopestyle snowboarders, climbers, and fistball players may be exposed to different stresses compared to volleyball, basketball, netball, tennis players, and swimmers, it is conceivable that the choice of overhead sport for analysis determines the prevalence of NSLBP.

The fifth point is that the quality and quantity of sleep can greatly influence the frequency of NSLBP.<sup>[3]</sup> Therefore, the assessment of sleep performance should be included in the analysis. It is also important that the extent of acute and chronic stress and depression be included in the analysis, as not only physical overload but also psychological overload can influence the frequency and intensity of NSLBP.<sup>[4]</sup> In this sense, it is also recommended to include personality type, the availability of coping strategies for life's injustices, and social behaviour in the analysis.


Overall, assessing the frequency of NSLBP in amateur athletes who perform overhead movements requires the inclusion of all factors that cause, trigger, modify, or mimic NSLBP in these athletes.

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# Response: “Nonspecific lower back pain in overhead athletes is multifactorial and is not solely determined by the type and intensity of the sport”

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I thank Dr Finsterer for his interest in our article, “Prevalence and risk factors of non-specific low back pain among amateur overhead athletes in Gauteng Province,” and for his comments highlighting the multifactorial nature of non-specific low

back pain (NSLBP).

The primary aim of the study was to determine the prevalence of NSLBP and to identify selected sport-specific risk factors among amateur overhead athletes, rather than to provide an exhaustive assessment of all biological, psychological, and lifestyle contributors to NSLBP.<sup>[1]</sup> This focused approach is consistent with existing sports medicine literature, which recognises NSLBP as multifactorial while supporting targeted investigation of sport-related contributors within defined populations.<sup>[2,3]</sup>

First, we agree that NSLBP may originate from multiple anatomical and systemic sources beyond the lumbar spine. However, the present study focused on NSLBP as it presents in physically active overhead athletes, where sport-related musculoskeletal loading and kinetic-chain function are clinically relevant. Participants with known neurological disease, systemic pathology, recent spinal or shoulder surgery, or other medical conditions likely to confound musculoskeletal assessment were excluded. Consideration of visceral, metabolic, or endocrine causes of low back pain, while important in broader clinical contexts, fell outside the scope of this sport-focused, cross-sectional study.<sup>[1]</sup>

Second, occupational and non-sport physical activity may influence the development of NSLBP. The study population consisted primarily of university-based amateur athletes with broadly comparable academic and training environments. Occupational workload was therefore not prioritised to maintain feasibility and focus on sport-specific variables. This limitation was acknowledged, and future studies incorporating objective workload monitoring across sport, occupation, and daily activity are warranted.

Third, the influence of medication use, diet, and substance exposure on NSLBP is recognised. These variables were not included due to the exploratory nature of the study, concerns

regarding recall bias, and participant burden. Importantly, the omission of these factors does not imply that biomechanical contributors act in isolation; rather, they represent modifiable components within a broader multifactorial framework.

Fourth, we agree that different overhead sports impose distinct mechanical demands. This observation aligns with our findings, which demonstrated variation in NSLBP prevalence across overhead sports, with higher rates observed in volleyball and basketball compared to swimming and tennis. Similar sport-specific differences in spinal loading among overhead athletes have been reported previously.<sup>[4]</sup>

Finally, we acknowledge the influence of sleep quality, psychological stress, and psychosocial factors on NSLBP. These were partially addressed through the inclusion of the Keele STarT Back Screening Tool and further acknowledged in the discussion and future research recommendations. Comprehensive biopsychosocial modelling was not an objective of the present study but represents an important direction for future research.

In conclusion, this study provides clinically relevant insight into NSLBP prevalence and selected biomechanical risk factors in an under-researched South African amateur athletic population. I appreciate Dr Finsterer’s contribution to the scholarly dialogue and agree that continued research adopting broader, integrative models is needed.

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