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DRUMMER LAB

drummer mechanics & ergonomics research

Rates and Patterns of Playing-related Musculoskeletal Disorders in Drummers.

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Rationale: Playing music is a physically demanding task, and like anyone who engages in strenuous occupational or athletic endeavours, drummers (herein defined as ‘percussionists who play the drum set’) may be at risk of sustaining a playing-related musculoskeletal disorder (PRMD) due to exposure to various injury risk factors. Specific examples include high forces exerted to strike the instruments, vibration from the impact of their striking implements (e.g., drum sticks, mallets, etc.), prolonged exposure to a highly repetitive task and/or static postures, and awkward postures and high loads while assembling, disassembling, and/or moving their equipment. However, little is known about the rates and risk factors for PRMDs in percussionists, and even less pertaining specifically to drummers.(1) In the extant PRMD literature, percussionists frequently appear within surveys of broader groups of instrumental musicians. The number of percussionists included in these samples is often small (i.e., $n \leq 30$), which makes establishing rates and patterns of injuries challenging. Furthermore, in these studies drummers were grouped together with other percussionists, if they were included at all. This is problematic because the physical demands of drummers are different from those of other percussionists. Finally, most studies to-date have focused on classically-trained percussionists. Very few have considered other musical genres (2); thus, the rigours of being a professional, non-orchestral drummer (e.g., studio work, tours, etc.), and the differences in physical demands among music genres (e.g., speed metal vs. hip-hop vs. easy listening), are under-represented in the extant literature. Although many of the known risk factors for PRMDs likely apply to all percussion sub-groups (e.g., weekly practice hours, warm-ups/cool-downs, etc.), the injury rates, patterns, and risk factors may differ due to differences in the physical demands: a) on drummers compared to other percussionists, and b) within drummers who play different styles of music.

Purpose: To examine the rates and injury patterns of PRMDs in drummers, and identify their associated risk factors, using an online survey. This document summarizes the results pertaining to the rates and injury patterns. Analyses of the data pertaining to drummer-specific risk factors are currently underway.

Methods: An electronic survey was developed based on a review of the literature (1-6) and consultations with a panel of expert reviewers. The panel consisted of experts in survey design ($n=2$), psychometrics and statistics ($n=1$), biomechanics and ergonomics ($n=1$), performing arts medicine ($n=1$), and professional drummers ($n=5$). The survey, which included questions on respondent demographics, history and patterns of PRMDs and related pain intensity and interference (3), and potential drummer-specific risk factors for reporting PRMDs, was distributed via social media using a snowball sampling technique. The target population

included individuals aged 18 years or older who exclusively played the drum set (minimum 5 hours/week [4]). Demographic and PRMD data were analyzed using descriptive statistics (continuous variables) and response frequencies (categorical variables). The prevalence of PRMDs were analyzed by body region (e.g., upper/lower limb, etc.) and by anatomical location within body regions (e.g., shoulder, knee joint, etc.). Responses to open-ended questions were organized based on common features so that broad themes and sub-themes could be established. Sub-themes were supported by individual quotes (i.e., “meaning units”) from the participants’ responses.

Results: In total, 865 survey responses were collected. Invalid responses were discarded (n = 34), yielding a data set of N = 831 respondents (749 males, $M_{\text{age}} = 40 \pm 14$ years). Lifetime history of PRMDs was 68 % (n = 563), and the 7-day history was 23 % (n = 193). Most respondents reported a history of multiple PRMDs (n = 489, 59 %). The upper limb was the most commonly affected body region (n = 491, 59 %). The wrist joint (n = 205, 25 %) and the low back (n = 200, 24%) were the most commonly affected anatomical locations. The mean composite pain intensity score was 3.0 ± 1.8 (mild pain intensity), and the mean composite PRMD interference score was 4.9 ± 2.2 (moderate PRMD interference). Less than half of the respondents with PRMDs reported receiving a diagnosis from a medical professional (n = 234, 42 %). Analysis of the diagnoses reported by these respondents yielded five main response categories, including *inflammatory conditions* (e.g., tendinitis); *neuropathies* (e.g., carpal tunnel syndrome); *back and spine problems* (e.g., intervertebral disc problems); *muscle and tendon problems, non-inflammatory* (e.g., muscle spasms/strains/fatigue); and *other diagnoses*.

Conclusions: The online survey yielded responses from drummers from 49 different countries, representing a broad spectrum of ages, career stages, experience levels, and musical genres. Drummers’ reporting of multiple PRMDs is consistent with previous findings in percussionists, but differences in the lifetime prevalence and patterns of injury support the notion that risk factors may differ between percussion sub-groups or participant characteristics. The results of this study confirm that PRMDs are a significant health problem for drummers that warrants further consideration. While this study provided foundational knowledge in the area of drummers’ PRMDs, more research is needed to identify drummer-specific risk factors, in order to develop PRMD prevention strategies and reduce the rate and burden of PRMDs in this population.

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