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THE NEGLECT OF MUSCULOSKELETAL DISORDERS AND OSTEOARTHRITIS WITHIN THE BROADER PUBLISHED HEALTH LITERATURE – A BIBLIOMETRIC STUDY

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Purpose: There is a general perception that musculoskeletal disorders (MSD) and osteoarthritis (OA) are low priority. This contrasts with the reality that these conditions are leading causes of health care visits, medication use and disability, and are among the most prevalent health conditions. The recent 'Global Burden of Diseases, Injuries, and Risk Factors' study reports that MSDs together, including OA, ranked first among the top causes of global years lived with disability (YLD), with MSD-related YLDs increasing by 61% from 1990 to 2013. We investigated the extent to which MSDs generally, and OA specifically are represented within the published health literature.

Methods: MEDLINE bibliometric data were retrieved for 2016 and 2011. The 26 disease branches, including MSD, within the broader 'Diseases' branch of MEDLINE's tree structure, were ranked according to citation counts, proportion of all citations, and increase in citations over the 5 years. Number and increase in citations for OA were also examined, as was the proportion of all MSD citations that included an OA indexation. MSD rankings were also considered within 5 groupings of general medical journals: geriatrics and gerontology, general and internal medicine, multidisciplinary sciences, primary health care, and public health.

Results: There were 506,153 MEDLINE citations in 2016, a 12% increase over 2011. In 2016, MSDs ranked 14th in citation count (with a total of 35,501 citations), dropping from 13th in 2011. Of all 2016 citations, only 7% were MSD-indexed. The 8% increase in MSD-specific citations from 2011 was below the 12% increase overall, and ranked 15th in magnitude of increase when comparing all 26 disease branches. In contrast, the number of OA-indexed citations increased from 2616 to 3294 over this period, a 26% increase. OA-indexed citations represented 9.3% of all MSD citations in 2016 (vs. 8.0% in 2011), and 0.65% of all 2016 citations. Within the specific disciplines of health considered, MSD-indexed citations had their highest ranking within 'Geriatrics & Gerontology', ranking 8th in 2016 (vs. 9th in 2011), and its lowest ranking within 'Public Health', ranking 19th in 2016 (down from 17th in 2011). Within the top 10 (by impact factor) 'Geriatrics & Gerontology' and 'Public Health' journals, MSD-indexed citations represented 3.1% and 0.8% of all citations, respectively, and OA-indexed citations 0.66% and 0.11%, respectively, in 2016.

Conclusions: These good news, bad news findings show that OA is getting more attention, but nevertheless only a small proportion of all citations were OA- and MSD-related, whereas estimates indicate that OA and MSD prevalence in adults exceeds 20% and 50%, respectively. Irrespective of the metric considered, MSDs cracked the top ten ranking only within 'Geriatrics & Gerontology', at 8th place with 3% of citations; 0.66% were OA-indexed. There is a clear disconnect between the extent to which OA and MSDs are represented in the literature and the extent to which these conditions impact on population health, healthcare and societal costs. A concerted effort to consider OA and MSDs as relevant public health issues, outside our community, is warranted. The World Health Organization's focus on non-communicable diseases associated with mortality omit non-communicable diseases such as OA and MSD that are leading contributors to high morbidity and high costs, and likely contribute to the neglect of recognizing OA and MSDs as a health priority.

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DEVELOPMENT OF A PREDICTION MODEL FOR HIP REPLACEMENT AMONGST FORMER ELITE RUGBY PLAYERS

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Purpose: Hip osteoarthritis has been shown to be the most prevalent musculoskeletal morbidity amongst former elite rugby players, with over 6 times the prevalence of hip replacement when compared to the general population. Identifying predictive factors associated with hip replacement as well as of their relative importance may help to develop medical and educational strategies to reduce this health problem. The purpose of this analysis was to develop a prediction model to identify those individuals at the highest risk of hip replacement.

Methods: Data from a cross-sectional study of English former elite rugby union players, undertaken between 2014 and 2016, was used to develop the prediction model. The outcome was self-reported hip replacement. Candidate predictors were identified from the literature and clinical expertise, and then revised based on clinical and sporting judgement. These included age, playing BMI, total years, level and primary position of play, professional status, number of games, weekly hours of training as a youth and adult, slipped upper femoral epiphysis (SUFE), hip dysplasia, severe hip injury, and a family history of hip OA. Missing predictor data was imputed using multiple imputation by chained equations. A logistic regression model was fitted with the least absolute shrinkage selection operator (LASSO) in R. A 10-fold internal cross-validation with the mean-squared error was performed to assess non-zero coefficients, and therefore identify significant predictor variables. Regression model assumptions and diagnostics were checked, and the predictive ability of each model was examined by discrimination and calibration measures.

Results: Of the 259 participants in this study, five had missing data on outcome, and therefore those were excluded for the analysis. 39 players (15.4%) had received a hip replacement. Players were on average 60.5 years of age, with a mean playing BMI of 27.9 kg/m^2, and a mean lifetime playing exposure of 22.3 years. Of all candidate predictors, lasso regression selected ten important variables to be included into the final model. These were hip injury, age, SUFE, professional status, family history, playing position, level of play, hours per week training as a youth, total years of rugby, and current BMI. In the full multivariable model, hip injury, age, SUFE, family history and playing in the second row or as a centre, wing or fullback, were significant predictors of hip replacement. The area under the receiver operator curve (AUROC) for this model, was 0.89.

Conclusions: This analysis demonstrated that it is possible to develop a prediction model for hip replacement amongst former elite players, with a relatively small dataset. Injury, age, SUFE, family history and position of play were seen to be key predictors of hip replacement. These specific risk factors should be further investigated to better understand the progression of osteoarthritis, and manage and mitigate the risk of hip replacement, within this population.

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BODY WEIGHT STATUS AND STATUS CHANGE OVER 5 YEARS AFTER ACL RUPTURE BY AGE, SEX, AND REGION: THE DELAWARE-OSLO COHORT

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Purpose: After anterior cruciate ligament (ACL) injury, little is known regarding changes in body weight status (i.e., normal, overweight, obese). This is a major gap since obesity is a major, yet modifiable risk factor for knee osteoarthritis. The purpose of this study is to describe body weight status and status change over 5 years after acute ACL rupture by age, sex, and region.

Methods: This is a secondary analysis from the Delaware-Oslo Cohort, a longitudinal cohort study of active individuals after acute ACL rupture from the United States (n = 150) and Norway (n = 150). Participants were included in this study if they had a unilateral ACL rupture confirmed by MRI and regularly participated in level I/II sports prior to injury. Cohort exclusion criteria included bilateral injuries or significant concomitant injuries. Height and weight were measured with a stadiometer and scale, or self-reported, early after injury (baseline), and at 6-months, 2-years, and 5 years following injury or reconstruction. Body mass index (BMI) was calculated from height and weight as kg/m^2, and used to categorize weight status (Normal <25 kg/m^2; Overweight 25–29.9 kg/m^2, Obese ≥30 kg/m^2). We calculated the BMI status proportions at each time point. The sample was further characterized by