

Weight-Training Injuries: A Systematic Review of the Etiology, Risk Factors, and Interventions

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PURPOSE: A 2008 military survey showed shoulder, back, and arm/wrist as most commonly injured body parts attributed to weight-training (WT). This review synthesized current literature regarding common causes, risk factors, and potential interventions for adult WT injuries. **METHODS:** Using systematic review guidelines, search terms (“injury”, “Weight training” and “resistance training”) with inclusion/exclusion criteria yielded 605 documents. Empirical data found was limited, so investigators used a qualitative approach to synthesize evidence. 76 documents selected for independent review by two investigators included retrospective analyses, prospective studies, case series, reviews, and guidelines. Quantitative data were limited and inconsistently reported. 33 selected documents were grouped by type for quality scoring. Scoring eliminated 6, resulting in 27 articles to extract and categorize specific injury types, risk factors (RF), and interventions. Qualitative evidence levels were assigned to each category/factor. **RESULTS:** WT injury rates were not consistently described, but select studies estimate 25-35% of WT adults are injured enough to seek medical care. Evidence supports military findings that most adult WT injuries are shoulder and back, mostly sprains and strains. Males appear at greater risk, more due to overuse than accident/acute trauma. Strong suggestive evidence indicates certain lifts especially attributed to WT injuries. Over >33% of articles cite the bench press; over 10% cite the deadlift and/or the squat. While 70% of articles cite improper form/technique as a primary cause (an estimated cause of >25% injuries), limited and inconsistent guidance on proper technique is available. Overtraining and associated RFs (fatigue, intensity, duration, and frequency) were the next most cited (22% of articles). Other RFs (weight belts, soft sole shoes, knee braces, mirrors, steroids) had weak levels of evidence. Effectiveness of interventions were weakly supported. **CONCLUSION:** Despite strong evidence as to the specific types of common WT injuries, evidence as to specific causes, RFs, and interventions is limited. Future efforts should first focus on improved identification of specific injury causes/techniques and RFs.