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Analysis of injuries in long-distance triathletes.

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Triathlon is an individual sport consisting of three disciplines - swimming, cycling and running. Triathlon has changed from a novel appearance to a very popular Olympic sport within the last fifteen years. Nevertheless, there is not sufficient data about injuries in triathlon. The aim of this retrospective survey was to investigate the incidence of injuries according to class of injuries, anatomical sites and disciplines. Relations to age, sex, performance level, training habits and medical care were analysed. Questionnaires were sent to all German speaking participants of the Ironman Europe 2000. With a response rate of 35 %, 656 questionnaires met the inclusion criteria. At least one injury was experienced by 74.8 % (95 %-CI: 71.3-78.1) of all respondents during their active time in triathlon. 51.1 % (95 %-CI: 47.2-55.0) suffered one or more contusion/skin-abrasions, 33.1 % (95 %-CI: 29.5-36.8) muscle-/tendon-injuries, 29.0 % (95 %-CI: 25.5-32.6) ligament-/capsule-injuries and 11.9 % (95 %-CI: 9.5-14.6) fractures. Most of the injuries happened during cycling (54.8 % [95 %-CI: 51.9-57.8]) within training sessions. 18.7 % (95 %-CI: 16.4-21.2) of all injuries occurred while the athletes were competing. Considering the low number of competition hours per year, the incidence of injuries during competition was higher than during training session. Significant relations were found considering the age, performance level and weekly training hours of the triathletes. Older athletes sustained more fractures ($p = 0.024$), high performance athletes suffered more contusions/abrasions ($p = 0.003$) and muscle-tendon-injuries ($p = 0.001$) and athletes with a large number of weekly training hours suffered more muscle-tendon-injuries ($p = 0.014$). To summarize, injuries in triathlon seem to be related to age, performance level and weekly training hours, but not to sex, presence of training coach and medical care.

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Factors associated with triathlon-related overuse injuries.

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STUDY DESIGN: Descriptive correlational investigation. OBJECTIVES: To assess the incidence of, and potential risk factors associated with, overuse injury in triathlon. BACKGROUND: The sport of triathlon is rapidly increasing in popularity with a concomitant rise in the prevalence of injuries sustained by triathletes. METHODS AND MEASURES: The training and injury patterns of 131 triathletes were surveyed over a 10-week prospective period during the triathlon competition season. A complementary retrospective 6-month analysis of training history and prior overuse injuries was conducted. RESULTS: Fifty percent of triathletes sustained an injury in the 6-month preseason at an injury exposure rate of 2.5 per 1000 training hours. Thirty-seven percent were injured during the 10-week competition season at an injury exposure rate of 4.6 per 1000 training hours. Overuse accounted for 68% of preseason and 78% of competition season injuries reported. Increased years of triathlon experience, high running mileage, history of previous injury, and inadequate warming-up and cooling-down regimes appeared to have individual associations with injury incidence. When interactions were included in a multiple logistic regression model, increasing years of triathlon experience was the most significant predictor of preseason injury risk and a previous history of injury and high preseason running mileage increased the risk of injury during the competition season. CONCLUSIONS: The results indicate that in assessing triathletes, a full training and competition history is required by the sports clinician for a comprehensive assessment of the factors that may contribute to overuse injury.