INTRODUCTION

Unintentional injury remains a leading cause of death and disability in the U.S. [1]. One particular pastime related to unintentional injury is the participation of exercise-related activities [2]. However, most studies of exercise-related injury have focused on either sport-related exposures or specific at-risk populations [3].

PURPOSE

The purpose of this study was to investigate injuries related to both non-equipment exercise (NEE) as well as strength training activity (STA) in U.S. adults.

METHODS

Study design: Data for this research came from the 2006-2015 National Electronic Injury Surveillance System (NEISS) which collects data annually from a representative sample of U.S. emergency departments (EDs) [4].

Sample size and composition: This analysis was limited to adults 18 years of age and older who presented to one of the sampled U.S. EDs.

Variables utilized: Product codes were used to identify injuries related to NEE and injuries related to STA. The two main variables in this study were weighted frequency of injury (NEE and STA) and year (2006 to 2015) [5].

Statistical analyses: Analyses focused on estimating the number of exercise-related injuries, changes in injury estimates across years, and changes in injury trends across demographic variables. SAS SURVEY procedures were used to compute descriptive statistics and estimate total weighted number of injuries [6]. Linear regression was used for 10-year trend analyses [7]. Inspection of residuals and computation of the Durbin-Watson statistic were both performed to detect autocorrelation in the data. If autocorrelation was detected, the SAS PROC AUTOREG was used to correct for it [8].

RESULTS

Average annual number of actual (and weighted) ED visits across the 10-year period was 5,257 (198,870) for NEE and 1,719 (67,334) for STA. Weighted number of NEE injuries more than doubled in the 10-year period from 118,135 in 2006 to 254,192 in 2015. Trend analysis of NEE injuries showed a significant linear increase ($R^2=9.39$, RMSE=14,874, $p<.001$). Weighted number of STA injuries also increased from 51,857 in 2006 to 82,526 in 2015. Trend analysis of STA injuries as well showed a significant linear trend ($R^2=9.33$, RMSE=3,413, $p<.001$). When analyzing injury estimates per 100,000 U.S. mid-year population, trends remained for both NEE ($R^2=9.18$, RMSE=6.50, $p<.001$) and STA ($R^2=8.98$, RMSE=1.48, $p<.001$). Similar patterns were seen across demographic variables.

CONCLUSIONS

Results from this study show that exercise-related injuries increased linearly from 2006 to 2015. Furthermore, injury trends were similar for NEE and STA.

REFERENCES