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Misconceptions of turkish pre-service teachers about force and motion.

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Summary: The purpose of this study was to diagnose the misconceptions held by pre-service physics teachers about force and motion. The secondary aim of the study was to detect whether misconceptions vary according to gender, educational level, and culture. The study was conducted with 79 student-teachers attending to one of the largest faculties of education in Turkey. Force Concept Inventory (FCI) was used to diagnose student-teachers' misconceptions. FCI is a conceptual test consisting of 29 multiple choice items. Each wrong choice for each question reflects a specific misconception about the force and motion concepts. Data from the study was analyzed by using frequencies, t-test, and ANOVA for making comparisons according to gender and years of education. Results of the study showed that student-teachers of physics hold very strong misconceptions about impetus and active force. No significant differences were found between male and female students' scores on the concept test. The results also showed that misconceptions about force and motion decreased through the years of education. However, they did not disappear completely. Findings of the study are very similar to the other research findings conducted on the subject in other countries. Student-teachers' conceptions about Newton's Third Law, on the other hand, were significantly better than those observed in other research done in other countries such as the US and Finland.

Classification: M55 M59 D75 D79

Keywords: mechanics; force and motion; physics; misconceptions; pre-service teachers; science education; quantitative research; Turkey

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