

Status Report on West Point Foot Structure Study and Boot Fit sent by Colonel Michael Neary, DPM

Colonel Michael Neary, DPM, Director of Podiatric Services at the hospital at West Point, has sent this interim report about the Foot Structure Study in which NYCPM participated (with other collaborators) while conducting a Boot Fit for the incoming class of cadets in late June (see Footprints, v.3 no. 7, July 2016).



Part of the research team that volunteered to ensure foot measurement and properly sized boot distribution to over 1300 new cadets from the Class of 2020 during the Boot Fit last June. NYCPM students and faculty wore their distinctive yellow T-shirts.

Collaborative Interdisciplinary Research Study Conducted on Foot Structure While Supporting the Cadet Class of 2020 Boot Fit

A research team made up of COL Michael Neary (KACH), LTC(P) Don Goss and Becky Zifchock (CME/CIE), along with collaborators from the New York College of Podiatric Medicine (New York), the Hospital for Special Surgery (New York), Temple University (Philadelphia), Novel Electronics (Munich, Germany), and over 45 student volunteers conducted a research study of the foot structure of the incoming class of cadets while simultaneously supporting the Boot Fit on R-Day +3. More than 1200 incoming cadets volunteered to take part in the study which is designed to profile the incidence of arch height and stiffness in West Point Cadets and their correlation to overuse injury.

This year the boot fit of over 1,300 cadets was executed in only one day. The devices used not only allowed an efficient and more effective method for fitting the cadets' footwear but also provided information on their arch height and stiffness which was recorded on an iPad application developed by a member of the

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research team. The research team used this information on the cadet volunteers' static foot structure, along with measures of dynamic foot function walking over pressure mats in order to classify certain foot types (i.e. the flat, flexible foot that pronates or the high stiff arch that supinates) and determine if there is a correlation to injury (i.e. a pathologic foot type).

In addition, the team also recorded the type of running shoe each new cadet presented to at Cadet Basic Training (CBT) as well as objectively recorded the resistance to torque with instrumentation designed in part with the research team, by physical therapist CPT Gary Helton, CDT Michaela Sulley and the Department of Civil and Mechanical Engineering. The physical therapy team also tracked running style with LED sensors and video with the goal of tracking running style. The incidence of overuse injury will also be tracked during CBT to determine if there is any correlation between injury and foot structure and function, shoe type or running style.

This data will then be added to the now 3 years of baseline data collected on over 3300 cadets while stationed at the United States Military Academy with goal of injury prevention. The present prevalence data and experience on the importance of fit and function of military and athletic footwear has already been shared with Initial Entry Posts, the Natick Soldier Research, Development, and Engineering Center, and our sister services.