Better than a Head Start: UD Researchers Develop Race Handicap Formula
BEFTER THAN A HEAD START:
UD RESEARCHERS DEVELOP RACE HANDICAP FORMULA

DAYTON, Ohio — It’s common for the winners of 5K races to be the youngest and lightest runners in the field.

Paul Vanderburgh and Lloyd Laubach, avid runners and associate professors of health and sport science at the University of Dayton, have developed a running handicap formula that would “even the field” by taking into account differences in age and weight. That means that in-shape 30- or 40-something competitive road warriors now have a shot at competing with Generation X runners who are often lighter and faster.

The researchers received $15,000 from StairMaster Sports/Medical Products Inc. to develop and study the formula. “This is the first formula to be based on hard data,” Vanderburgh said.

The model combines scientific knowledge about effective body dimensions on performance with the documented decrease in cardiovascular fitness as a result of the aging process.

A research article written by the pair will appear in the April issue of BioMedical Sciences Instrumentation. On June 1, the researchers will present their “5K Run Age and Weight Handicap Model for Men and Women” at the American College of Sports Medicine national conference in Indianapolis.

Vanderburgh said his interest in creating the formula began at West Point Military Academy where he served and taught. “Though there are very few people there who are overweight and most cadets are very motivated, the lighter people generally came in first in our
distance runs," he said.

"It turns out that there are very good physiological reasons why cardiovascular capability decreases in larger people," he said. In addition to size, research shows that the "maximum heart rate goes down about one beat per year," Vanderburgh said.

Using the handicap formula, a run-time adjustment that is based on optimal performance for a certain weight and age is subtracted from a runner's actual run time. A runner or race organizers could use the StairMaster handicap charts to determine adjusted run times.

For example, a 23-year-old female runner who weighs 123.2 pounds finishes the race first at 19:39 (minutes:seconds). A 45-year-old woman, weighing 149.6 pounds, finishes second at 21:48. Another 45-year-old, weighing 195.8 pounds, finishes third at 24:28 and a 60-year-old, weighing 165 pounds, finishes fourth at 25:24.

After adjusting for age and weight, Vanderburgh and Laubach's model shows the 45-year-old, 149.6-pound runner finishing first overall with a time of 16:38. The 23-year-old runner would finish fourth at 17:45 when using the handicap.

Vanderburgh does not suggest that the handicap model should replace traditional race award systems that are based only on time. He proposes that the handicap would simply allow for recognition of runners who are in good shape and have good finishes for their size and age.

"If you are an older and heavier runner, you feel relatively unfulfilled," he said. "We are trying to show that there are ways to compare runners of all sizes. We would like to see more heavy and older runners competing."

Vanderburgh and Laubach plan to attend several races — 5K, 10K, half- and full-marathons — during the next year to collect data and test their model at different race lengths.

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For media interviews, call Paul Vanderburgh at (937) 229-3997 or e-mail vanderbu@yar.udayton.edu. Call Lloyd Laubach at (937) 229-4205. For more information, call Erika Mattingly at (937) 229-3212.