What was the original evidence to support this idea?

The largely relationship-focused, kinaesthetic nature of teaching karate is meaningfully different from the standard transmission method of information sharing that occurs in the classroom. I hypothesized senior karate students would understand classical mechanics principles more thoroughly than non-karate students.

Figure 1: Results from a classical mechanics conceptual survey conducted with 100 participants of varying skill level. Participants with the greatest karate experience showed both the highest total score and the highest average score as well as the highest low score.

Can karate be used to teach classical mechanics to high school students during Physical Education class?

The novel presentation method appeals to students otherwise not engaged in a formal classroom session. The kinaesthetic nature of teaching karate provides students with a relevance and context to their physics learning. Students across all age levels have engaged and shown enthusiasm for learning in this way.

Figure 2: The difference between the students who undertook the karate classes and the rest of the cohort are shown.

- An entire Year 11 cohort at a public, girls-only school was pre/post tested at the beginning and end of the school year.
- Testing occurred before and after cohort were taught classical mechanics in Science class.
- Two classes of Year 11 girls who had chosen to take Physical Education also underwent a 12 lesson series of karate lessons with the underlying classical mechanics principles explained and demonstrated.

Are there any new resources being developed to support teaching classical mechanics through karate?

Currently, work is being done with the biomechanics group in the School of Physical Education Sport and Exercise Science at the University of Otago to develop some classroom resources based on real biomechanics data for students. This material can be used to complement practical experiential learning.

Where can I learn more?

Email: emily.hall@otago.ac.nz
Web: blogs.otago.ac.nz/karatephysics/
Phone: 021 166 4107