Performing physiology outreach

Traveling to Australia and seeing its beautiful landscapes, friendly people, and exotic wildlife is a wonderful experience that creates lifelong memories. In 2015, I received a summer fellowship from my university which allowed me to make the journey to perform outreach in a primary school near Melbourne, Victoria. As a physiologist, I take part in Physiology Understanding (PhUn) week each year (phunweek.org) and it was the obvious curriculum choice to bring to Australia. Before traveling, I contacted the Assistant Principal at a public primary school and she connected me with the physical education (P.E.) teacher. Together, the PE teacher and I scheduled the days and times I would teach my lesson. All total, I taught four 3rd-4th (classes are combined in AU) and four 5th-6th grade classes (Tab. 1).

Gender	**Racial Representation**	
Males = 81	American Indian/Alaskan Native	0
Females =95	Asian	6
Ethnic Representation	Native Hawaiian/Pacific Islander	0
Hispanic/Latino = 0	Aboriginal/Torres Strait Islander	12
	White	155
	Other= Indian	3

Tab. 1. Student Demographics

The lesson started with me describing the role of a physiologist. I explained how the heart worked and demonstrated on a squeezy artificial foam heart (squeezy heart) how both atria contract at once followed by both ventricles to pump the blood through the heart. All the students were given a squeezy heart and together we squeezed both atria with our right hands while shouting “Atria”. Then with our left hands on both ventricles we shouted “Ventricles”. The sequence “Atria” then “Ventricles” was repeated several times. The students got excited when I told them to repeat the sequence at a faster rate and they did so until I told them to stop, it was time to move on. Then we created our hypothesis: *Heart rate increases with exercise.* The

method of performing an experiment was presented and it was emphasized that no equipment other than a watch for timing was needed. I demonstrated to the students how to measure their own heart rate at the carotid artery and the students took their pre-exercise heart rate. Next we headed out to the playground and the students ran around the track for five minutes with their PE teacher. After exercise they measured their heart rate again. As a group, the results were discussed and all agreed that their hypothesis was supported. I explained why the heart rate needed to increase with exercise, to deliver oxygen to working muscles to make energy. We then proceeded to the next experiment and the students were each given a pedometer and shown how to calibrate it. They then performed the *Pedometer Challenge*, which involved predicting how many steps it would take to arrive at the end of the playground and return. Each student made a prediction, then walked to the end of the playground and back. Results were discussed and the next challenge, to run to the end and back, was presented. Students made new predictions and performed the challenge. We discussed why the number of steps when running was less. Then I asked the students for other ways of conducting the experiments at home and they gave suggestions. One suggested taking their heart rate before and after football (soccer) practice. Another suggested riding a bicycle and measuring the number of foot movements with their pedometer. To conclude the lesson the importance of healthy eating and active living was discussed with the students. They gave examples of healthy and unhealthy food. Sharing my physiology expertise to teach the students more about how the human body works was a rewarding and fun experience for both students and teachers alike.

Patricia A. Halpin
Department of Life Sciences,
University of New Hampshire at Manchester, Manchester NH, USA

Publication

Performing international outreach: PhUn Week in an Australian primary school.
Halpin PA
Adv Physiol Educ. 2017 Mar 1