

Childhood is a pivotal period in determining the life course trajectory of cardiovascular risk factors. The increasing prevalence of elevated blood pressure associated with childhood obesity represents a significant global health challenge. To be healthy, children need to have healthy arteries (macrovasculature) as well as functional small blood vessels (i.e., the microvasculature). These macro- and micro-blood vessels develop and gain functionality as children grow. Physical activity ensures children develop a functional vascular system. A low level of physical activity is a good predictor of children's vascular dysfunction. Exercise-based programs aiming to support children's health are often regimented and conducted in structured environments, such as laboratories, hospitals, and school-based curricula. However, playing is the most natural way for children to be physically active.

Through years of partnering with local communities, Dr. Belcastro's team already knew children engaged in regular active playing of self-paced cooperative games experienced greater self-enjoyment and health benefits, including reduced blood pressure. Yet, the mechanism(s) controlling this beneficial blood pressure response to active play have not been investigated until now.

Drs. Moghaddaszadeh and Belcastro's article shows that a five-week community-based summer camp self-paced active play program enhanced the capacity of children to bring blood to their skin. Surprisingly, the process appeared to not be dependent on the endothelium, the tissue that covers the inner layer of blood vessels, but rather on the smooth muscle. This improvement preceded changes in estimated  $VO_2$  max.

This project was all about collaborations—locally with the children and their parents within the community (i.e., the Centre for Spanish Speaking), within the MHRC with vascular physiologists Drs. Edgell and Roudier, and internationally with Dr. Agnès Vinet, the director of the 'Laboratoire de Physiologie Expérimentale Cardiovasculaire' at the 'Université d'Avignon et des Pays du Vaucluse' (France). These collaborations allowed Dr. Angelo Belcastro and Dr. Asal Moghaddaszadeh to utilize a non-invasive approach to accurately assess children's vascular function in a community-based setting where children were engaged in guided active play.

To summarize, this study shows that a short-term active play program can change children's vascular function before any other cardiometabolic parameters become evident. The knowledge that a short period of time could support beneficial adaptations in cutaneous microvascular blood flow through vascular smooth muscle could provide an opportunity to identify new community-based strategies to ensure children's healthy microvascular development. This novel finding underscores the value of delivering physical activity using active play as a way to provide a mixed modality of physical activity to support children's vascular functions.