PREFACE
by Claude Bouchard

It is an honor for me to be given the opportunity to contribute to this Festschrift recognizing the many accomplishments and the global legacy of Professor Robert M. Malina. Over the last 40 years, I have had the privilege of being able to observe from a front-row seat the numerous contributions made or spearheaded by Professor Malina, and this commentary is inspired by sustained contacts with him over these decades.

Anyone who has reviewed the curriculum vitae of RMM realizes that his research interests extend from human biology in the broad sense to exercise science, with a particular focus on growth and a variety of pediatric issues. His contribution to science spans a period of 50 years. He published his first research paper in 1962 in the *Journal of Bone and Joint Surgery* (Rarick et al., 1962). Since then, he has contributed to the advancement of knowledge in areas as diverse as the morphological growth of children; motor development and motor skills across the growing years; maturation, including age at menarche; skeletal age; growth and sports performance; the risk factor profile for common chronic diseases in children; and the role of social, cultural and economic circumstances as seen in developed and developing countries on growth and maturation.

Robert M Malina has published almost 400 peer-reviewed research papers and about 300 book chapters, technical papers, book reviews and other reports. He has also written several monographs and books. His publications have been cited more than 7,600 times in the world literature.
DEVELOPMENT OF STRENGTH PARAMETERS DURING CHILDOOD AND YOUTH: A LONGITUDINAL STUDY FROM CARIRI, BRAZIL

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INTRODUCTION

Longitudinal studies of motor performance, particularly pertaining to strength parameters, describing children and adolescents development are limited in the pediatric exercise science literature. For example, a review of changes in motor performance from a variety of tasks in boys and girls, followed for several years, was reported by Malina et al. (2004). However, many of the studies reviewed were conducted some 10-20 years prior to publication. In addition, no formal modeling or hypothesis testing were produced to interpret performance changes presented in the review. Within the European mainstream, the best approach to describe repeated information concerning motor performance was performed by Beunen et al. (1988). They provided distance and velocity charts for several motor tests (flamingo balance, plate tapping, sit and reach, vertical jump, standing long jump, arm pull, leg lifts, sit ups, shuttle run 50m, and shuttle run 480m) for Belgian boys followed over 6 years from 12 to 18 years of age.

Seminal work about static strength changes during youth was reported by Carron and Bailey (1974). They followed 99 Canadian boys from 10 to 16 years of age, using seven static strength tests. They found that maximum strength increments occurred 1 year after peak height velocity and peak weight velocity. Early maturers had significantly greater strength than late maturers. However, when strength was divided by body height, the results remained unchanged. Furthermore, when the effects of weight were factored out, no differences remained among groups of different maturational levels. In Belgian boys, Beunen et al. (1988) showed that static strength (arm pull test) increased fairly linearly with chronological age from early childhood to approximately 12 or 13 years of age. On the other hand explosive strength performance (standing long jump test), and on average, increased linearly with age in both sexes until 12 years in girls, and 13 years in boys. In contrast to girls, in boys, a clear growth spurt in explosive strength was seen to occur, 6 months after age at peak height velocity and coincided with peak weight velocity. In both sexes, size, body composition and biological maturation were associated with strength