



ARA POLICY STATEMENT ON THE USE OF INDOOR ROWING MACHINES BY PRIMARY AGE CHILDREN

The ARA does not promote indoor rowing to children below key stage 3 (under 11 years of age), unless in the case of final year students having an experience of indoor rowing as part of preparing to go to secondary school.

Rationale

Health and Safety: Back Health

Like cycling and running, rowing is a whole body exercise, and like cycling is non-weight bearing and low impact. In addition to the aerobic component shared by all of these exercises, rowing involves strength endurance actions of the muscles, that can load the spine with forces measured on an indoor rower equivalent to up to 4.6 times body weight (Morris et al., 2000). This means that rowing presents equivalent loads to weightlifting, yet involves far more repetitions.

The repetitive loads experience during rowing on the water and indoors can present an injury risk to susceptible individuals or groups. The lower back has been reported as the most common site of injury in rowers (Wilson and Gormley 2005, Rumball et al., 2005), with the increasing incidence of injury (McGregor et al., 2004), attributed to a combination of changes in oar design, and increased training volumes including use of the ergometer, which has been cited as a common source of back pain and injury (Bernstein et al., 2002, Teitz et al., 2002). Rowing activities at higher rates, and fatigue during sessions can both cause marked changes in the pattern of rowers' movements (McGregor et al., 2004). Repeated bursts of even shorter high rate and high intensity activity can promote an incorrect sequence of movement and low levels of motor skill which could play a role in the mechanism leading to chronic back injuries.

Children of primary school age are not likely to have the level of overall training, as they are developing their physique and frequently have poor general muscle strength, body awareness and posture as reflected in the literature on exercise, obesity and back pain in children. A developed physique, including good muscle strength, core stability and flexibility, is important to be able to attain, and sustain the postures required for good rowing technique across the duration of a rowing session. Recommendations for resistance training pre-puberty encourage low loadings and a task mastery approach, as gains in muscle strength pre puberty are due to improved neural co-ordination with little increase in muscle size (BASES 2004). Junior participants of 11 plus already compete over shortened distances on the rowing machine and with reduced drag factors, which reflects their reduced ability to tolerate high forces and high training workloads on the rowing machine.

Long-term participant development

Ensuring movement literacy

To get the best enjoyment or success from indoor rowing participants should have the ability to; balance, co-ordinate leg and trunk movement patterns, move in time, follow and create rhythm, do two legged activity, work in a team, be flexible, have core stability and have an awareness of their body in space. It is important that all primary school children focus particularly on developing these literacy skills, along with throwing, catching, striking and kicking, as these will provide the foundation for their future participation in all sports. These skills can be best learned as part of a general movement literacy programme, which does not require a rowing machine.

Promoting long term participation

Games and play activities are promoted for early primary school children, that foster fun and enjoyment, rather than structured activities that mimic training. A logical progression of activities on the indoor rowing machine is



likely to involve extending either the duration of the session or activity and hence the distance rowed, or the intensity of the efforts performed, which is of concern for primary age participants.

It can be difficult to ensure that there is the continuity of a teacher with indoor rowing knowledge, who can ensure that good technique is always taught and maintained even in short sessions, and who can provide a high quality enjoyable indoor rowing experience to sustain the enthusiasm that pupils have in the initial sessions. Without significant investment in training and long term "hands on" support indoor rowing is unlikely to be sustainable, this situation is more acute at primary schools which have wider PE resource and staff issues than secondary schools.

Summary of rationale

- Rowing at a high rate, and or long sessions on the indoor rowing machine, can present an injury risk, particularly to strength immature youngsters
- Children of primary age may not be mature enough to cope with the resistance and repetitive loadings involved in indoor rowing
- The focus of primary P.E. should be on developing general literacy skills in activities that don't need an indoor rower, whose monitor functions are inherently likely to promote rowing farther or faster per session
- Staff continuity and training may not be sufficient to ensure that the quality of technique is maintained sufficiently to present a reduced injury risk

References

BASES (2004). Guidelines for resistance exercise in young people.

Bernstein, I.A., Webber, O. and Woledge, R. (2002). An ergonomic comparison of rowing machine designs: possible implications for safety
British Journal of Sports Medicine, 36:108-112

Karlson, K.A. (2000). Rowing injuries. Identifying and treating musculoskeletal and nonmusculoskeletal conditions. Physician and Sports medicine 28:4. 40-50.

McGregor, A.H., Bull, A.M.J. and Byng-Maddick, R. (2004). A comparison of rowing technique at different stroke rates: A description of sequencing, force production and kinematics. International journal of sports medicine. 25, 465-470.

Morris, F.L., Smith, R.M., Payne, W.R., Galloway, M.A. and Wark, J.D. (2000). Compressive and shear force generated in the lumbar spine of female rowers. International journal of sports medicine 21, 518-523.

Reid, D.A. and McNair, P.J. (2000) Factors contributing to low back pain in rowers. British Journal of Sports Medicine 34:5, p321-322

Rumball, J.S., Lebrun, C., DiCiacca, C.M., Orlando, S.R., (2005). Rowing injuries
Sports Medicine, 35:6, 537-555.

Teitz, C.C., O'Kane, J. Lind, B.K., and Hannafin, J.A. (2002). Backpain in intercollegiate rowers. The American Journal of Sports Medicine 30:674-679 (2002)

Wilson, F. and Gormley, J. (2005). A 12 month prospective study of injury and associated risk factors in rowing. British Journal of Sports Medicine, 144.