



Even smarter bodies? Increasing the somatic literacy of PDHPE teachers

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School children bring their entire movement history with them into the Physical Education lesson. How can teachers be better equipped to help children to overcome habits of posture and co-ordination that have already become ingrained? Could the first step be to enhance the kinaesthetic intelligence (or Somatic Literacy) of our teachers?

This paper outlines why the field of Somatic Education has a valuable contribution to make in the training of Physical Education teachers. A Motor Learning course incorporating introductory Somatic Education, which has been part of the training of PDHPE teachers at the Australian College of Physical Education in Sydney, will be described.

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Introduction

A recent posture survey (Nicolson, 1998) revealed that 86% of a class of 87 final year trainee primary school teachers considered themselves to have poor posture. Sixty-six percent responded that they couldn't stand or sit for long periods of time (e.g., when doing assignments) without problems or pain. Virtually no one could name the kinaesthetic/proprioceptive sense as that detecting body position and movement (with the eyes closed).

The author has observed that even trainee physical education students in her Motor Learning classes, despite their very active sporting backgrounds, have displayed a surprising lack of proprioceptive awareness in postural self-evaluation tasks. To give a frequently occurring example, students report that they sense their hip joints to be in vertical alignment with their shoulder joints, when observers can easily see that their hip joints are displaced forward of the vertical "plumb line" from the shoulders. It has also not been uncommon for such students to report to the author that they suffer from chronic back pain and postural problems.

The Lost Sense of Bodily Awareness (Proprioception)

The author has often given her college physical education students this quiz: "Close your eyes and touch your index fingers together above your head. Now tell me which sense did you use to position your arms and fingers before they touched?" The students generally have no idea.

One reason for this lies in the recent history of the proprioceptive/kinaesthetic sense. The classification of

senses into "special" and "general" has left most of the population with the strange notion that we humans have "five senses": vision, hearing, taste, smell and touch. These five are, of course, the so-called special senses. Proprioception (literally "self sensing"), or the kinaesthetic (movement) sense, vestibular and tactile self sensing, has vanished almost entirely from the public mind. Textbooks on motor development such as Gallahue and Ozmun (1995) fail to include either proprioception or kinaesthetic in their index, and mention proprioception only in limited contexts such as adult changes in the vestibular system.

The PDHPE syllabus (K-6, 1999, p38) perpetuates this idea of five senses. Even when "The Body" is the subject matter in the K-6 PDHPE syllabus (1999), the discourse seems limited to body-part naming skills (Growth & Development, p.38-40) or visual body image awareness (Personal Identity, p.44) with no mention of proprioceptive awareness. In dance classes and in aerobics classes, the emphasis on visual information (as the students look in the mirror or look at the instructor) can override proprioceptive feedback. Even in the research and theories of motor learning, the emphasis is on extrinsic feedback (KR), or on visual feedback. The role of somatosensory feedback has been neglected.

The result of this neglect of what has been called "the lost sixth sense" (Garlick, 1990) may be those "overuse injuries" which are actually "misuse injuries" in the dance and sport fields as well as in the general population.

Somatic Intelligence

In 1983, Howard Gardner proposed the term *bodily-*

Features of Somatic Intelligence

- sensitive and accurate proprioception (bodily awareness)
- the ability to continually sense one's body while engaged in a task, with as much attention to the process as the product of movement
- the ability to sense and let go of unnecessary muscle tension
- freedom of the head-neck joint, allowing natural postural reflexes
- well developed postural integration of the spine as a self supporting column
- optimal interlimb co-ordination and integrated whole-body movement
- awareness of one's habits: these include posture, movements, reactions to stimuli, somatic-emotional states, problem behaviours
- the ability to catch these habits and move into new alternatives
- an openness to new information and the potential for body-based learning
- a bodily felt sensitivity to one's interconnectedness with others balanced by a clear sense of one's boundaries

Table 1: 'Somatic intelligence' differs from Gardner's 'kinesthetic intelligence' by emphasising bodily awareness and postural processes that underlie the performance of motor skills.

kinaesthetic intelligence to refer to a form of intelligence "not widely developed in our culture" (p.207). More recently, Paul Linden (1994) has used the terms *somatic intelligence* and *somatic literacy* to describe the neglected aspects of intelligence addressed by somatic education, suggesting ways in which somatic education "could take its place within the field of physical education" (p15). Somatic intelligence (see Table 1) might include elements of Gardner's "kinaesthetic intelligence" and "intrapersonal intelligence" (Gardner, 1983).

Somatic Education

- Somatic Education is the umbrella term used by Thomas Hanna (1986) to embrace a large number of related movement re-education techniques (Johnson, 1995; Knaster, 1996). These include the Alexander Technique and the Feldenkrais Method, which are currently the most well known representatives of the field in Australia. The term "somatic" (Hanna, 1986), derives from "soma", which refers to "the body as perceived from within". This highlights the fact that somatic education is an experiential body-based learning process rather than a didactic or cognitive one.

The Goals of Somatic Education

Somatic Education aims to help students become more aware of their own habitual patterns of standing, sitting, walking, attending and acting. Through guided movement exploration and learning to undo such habits, they may be able to reduce their unconscious interference with the innate postural reflexes and fundamental co-ordination patterns that underlie and support both everyday movements and athletic motor skills.

It is reasoned by somatic educators that, by reestablishing optimal skeletal alignment and heightening the student's kinaesthetic awareness, somatic education will: (i) con-

tribute to sports injury prevention; (ii) act as a remedial strategy for pupils with poor co-ordination, and (iii) fine-tune the performance of elite athletes.

Examples of Somatic Education in Tertiary Education

In Toronto University, physical educator Ninoska Gomez has introduced aspects of Body-Mind Centering, a form of Somatic Education, into teacher training. She has popularised the use of large inflatable balls to develop bodily awareness and stimulate reflexes involved in balance and whole-body coordination (Gomez, 1992). Somatic principles and methods have also been incorporated into tertiary level Physical Education at Ohio State University (Kleinman, 1986; 1994) and at Zinman College in Israel (Brandes and Bassan, 1998).

In a paper presented at the 1998 conference of the Australian Council for Health, Physical Education and Recreation (ACHPER), Chris Raff, a teacher of the Alexander Technique, suggested that "psychophysical education be part of the teacher's forte. It is like a pre-technique to activities. It is to consider more thoroughly the means whereby we gain our ends." (Raff, 1998, p.13).

Somatic Education is now appearing in Australian tertiary education, in the fields of dance, music, acting, physiotherapy, and physical education. In Sydney, Alexander teacher Greg Holdaway and Feldenkrais practitioner Zoran Kovich have introduced somatic education into the training of dancers at university level. Both are part of the government-funded "Somdance" Project (Available: <http://www.alexandertechnique.com.au/somdance.html>) "exploring how best to integrate somatic educational methods and experiences into technically based contemporary dance classes and programmes of study". The Somdance team (which includes Rebecca Gregg, UNSW Dance, and Jacqueline Simmonds, UWS Dance) is now compiling a manual of procedures for dance educators. Another Somatic Education discipline, Body-Mind Centering, is being incorporated into dance education by Llewellyn Wishart, based in Melbourne.

Somatic Education at ACPE

From 1991 to 1998, the author incorporated somatic education into courses at the Australian College of Physical Education, Homebush. The following is a description of a Motor Learning course that takes a broad integrative view of the field, drawing upon the perspective of Newell (1991):

"...it is becoming increasingly clear that the three subdomains of study - motor learning, motor control, and motor development - hold considerable common theoretical ground... The motor skill acquisition domain also falls on the boundaries of instructional theory, especially with respect to the role that a change agent (such as a teacher, instructor, or coach) may play in facilitating the acquisition of skill..." (Newell, 1991, p.214)

Motor skill acquisition is thus located within the context of motor development, motor control, kinaesthetic feedback and movement enhancement techniques. Workshops offer a taste of newly emerging resources for athletes and coaches from somatic education. Students journal weekly applications of theory and practice to a current motor learning challenge they wish to work with.

Theme	Lecture Topic	Practical Workshop	Reading*
1) Multiple intelligences	What is somatic intelligence?	Experiential anatomy Posture & mood	Linden '94 Hanna '80
2) Bodily awareness in movement	Kinaesthetic feedback	Correcting faulty "body mapping" - examples	Conable '92 Olsen '91
3) Early motor development	Role of early mov't. patterns in later motor skills	Developmental Repatterning - physioball applications	Gomez '92 Cohen '93
4) Improving co-ordination	Somatic education in schools	Feldenkrais Awareness Through Mov't tapes	Howell '82 Hall '91
5) How to change movement habits	Undoing poor posture & mov't	Alexander Technique principles and video	Brennan '96 Gelb '81
6) Motor skill acquisition	Transfer of learning Rhythmic competency	Learning a new rhythm - feet and hand drumming	Williams & Bradford '91
7) Motor control	Dual systems - implications for habits		Juhan '87

Table 2: Somatic Education Incorporated into a Motor Learning Course.

The way in which somatic themes are developed and integrated into lectures, weekly reading materials and practical workshops are summarised in Table 2.

Somatic Themes within a Motor Learning Course

Multiple Intelligences

The theme of multiple intelligences is developed through a discussion of Paul Linden's 1994 paper, *"Somatic Literacy: Bringing Somatic Education into Physical Education"*. The links between somatic intelligence and emotional intelligence (Goleman, 1996) are explored by discussing the relationship of posture to mood. Students explore the way their typical response to stress may be reflected in their own body posture, using Hanna's (1980) descriptions of the "Red Light" (fear-withdrawal) and "Green Light" (coping through effort) patterns.

Bodily Awareness in Movement

A section of the course focuses on the role of sensory feedback, especially proprioceptive feedback in the learning process. "Motor learning involves more than motor processes: it involves learning new strategies for **sensing as well as moving**" (Shumway-Cook and Woollacott, 1995, p.95).

Students assess, through a simple experiment conducted in a workshop, the accuracy of their own proprioceptive feedback, by comparing their self perceived postural alignment (felt proprioceptively) to visual feedback from a partner (using a posture grid) and their own visual feedback (using a mirror). Students are often surprised at the discovery that their felt body alignment is so different from reality.

The concepts of "body mapping" and "mapping errors" (Conable, 1991) are illustrated by some experiential anatomy: students are asked to point to a key joint (e.g., hip); they are then guided to find the joint's accurate location experientially, thereby discovering inaccuracies in their own body maps. Conable provides examples of how such inaccuracies produce suboptimal movement patterns that are incorporated unconsciously into new motor skills.

The adolescent growth spurt and its effects on posture and co-ordination are discussed in the unique context of Conable's theory of body mapping, a concept he has developed over years of teaching the Alexander Technique to young musicians and dancers. Especially unique to his perspective are the methods for correcting such problems.

Early Motor Development

The controversial role of neonatal reflexes in later postural and locomotor patterns is discussed with reference to Bonnie B. Cohen's Developmental Repatterning approach to motor development (Cohen, 1989) - an aspect of Body-Mind Centering. Possible relationships between rudimentary locomotor patterns (homologous, homolateral and contralateral) and the phases of fundamental motor skill development are illustrated through the phases of throwing. Reflexes, righting reactions, equilibrium responses and whole body movement patterns are experienced in practice in the physioball workshop. The Developmental Repatterning use of physioballs, developed for PE by Gomez (1992), is quite different from their recent use in fitness classes or physiotherapy.

Improving Co-ordination

Howell (1982) documented her introduction of Feldenkrais Awareness through Movement into high school and college classes. After reading this paper, Motor Learning students are guided through a Feldenkrais Awareness Through Movement lesson on tape (Hall, 1991). They journal and discuss this experience and are encouraged to incorporate more experience of the Feldenkrais Method into their project or essay, either using other lessons from tapes in the college library, or by having an individual Functional Integration lesson with a Feldenkrais practitioner.

How to Change Movement Habits

After reading written descriptions of the Alexander Technique by Brennan (1996) or Gelb (1981), students are shown introductory videos about the Technique and some of its fundamental principles are outlined. These include "primary control", "inhibition", the "directions" and "conscious constructive control". They are led through the

A.T. semi-supine practice. Students are encouraged to have either group or individual Alexander Technique lessons with a qualified teacher, so that they can experience for themselves the dynamic head-neck-back relationship, and the spinal integration and lengthening that they observed on the videos.

Motor Skill Acquisition

Topics covered in this section of the course include the role of factors such as visual feedback, knowledge of results, attention and memory, practice, transfer of learning, motivation, emotion, gender, and aging. Some of these themes are taken up in a practical workshop in which the motor skill acquired is rhythmic movement. In their background reading, students are introduced to the concept of rhythmic movement competency and the methods of Phyllis Weikart (Williams & Bradford, 1991). Then in the workshop they experience learning a motor rhythm, first using stepping and then transferring the same rhythm to claves (click sticks) and finally to a Middle Eastern drum.

Motor control

The transfer of motor control to different brain regions is an integral feature of motor skill acquisition through practice. The advantages and disadvantages of dual systems of motor control are discussed (Juhan, 1987). It becomes apparent why traditional methods of postural correction, largely acting through the "voluntary" (alpha) system, cannot successfully change the habits of the "involuntary" (gamma) system, which are, however, reached through somatic education.

Course Journal

Students select a motor learning challenge to work on, applying the principles and methods introduced each week to this challenge and recording their experiences. The challenge can be either an example of a skill currently being learned or refined; a skill being taught; or a postural/pain problem the student wishes to address.

Course Project

Among the choices students can elect to do for a course project are several based on Somatic Education. Students can seek out tapes or practitioners of somatic methods

Students will be able to:

- differentiate between cognitive and kinaesthetic learning and describe features of somatic intelligence;
- describe how inaccurate kinaesthetic feedback interferes with optimal motor performance;
- outline ways in which faulty rudimentary postural and locomotor development can hamper fundamental motor skill development, and describe possible interventions;
- differentiate between product-oriented and process-oriented measures of motor behaviour; relate these to the ideas of "end-gaining" and "means-whereby" from the Alexander Technique;
- describe stages of motor skill acquisition and how these relate to shifts in motor control systems;
- demonstrate in a weekly journal how they have applied the concepts and practical methods of the course to a practical current example of motor learning/teaching.

Table 3: Course Objectives Relating to Somatic Education.

Syllabus/Strand	Subject Matter & Suggestions
K-6 (1999)	
Growth & Development Early Stage 1 Stage 1	The body: the senses - include the sense of bodily awareness/ proprioception/kinaesthetic sense and somatic education exercises in self sensing (e.g., Olsen, 1991)
Stage 1	Body Systems: skeletal - correct errors in body mapping (self sensing of the position and functioning of the joints) (e.g., Conable & Conable, 1998)
Dance, Games & Sports, Gymnastics	Somatic education offers effective ways of teaching fundamental postural awareness and ease of movement which supports efficient motor skill learning; Consultants in Alexander Technique and Feldenkrais Method could be brought in.
Personal Identity Stage 3	Body Image - proprioceptive self sensing offers an alternative to visually based body image, giving a bodily basis of self confidence (Williams, 1989;91)
Years 7-10 (2001)	
Movement Sense	Body control and Body Awareness - refining the accuracy of proprioception and correcting postural habits;
Movement Skill	Movement Principles - e.g., principles of primary control (the importance of the skull-spine relationship for dynamic posture), inhibition (pausing in order to correct a poor movement habit) and direction (moving toward optimal movement) from Alexander Technique; Postural influences on skilldevelopment
Stage 6 (1999, 01) Prelim.Core 3	The Body in Motion - Somatics offers an experiential component of this module i.e., self-sensing the bones, joints, muscles in movement (e.g., Cohen, 1993; Hartley, 1995)
HSC Core 2	Factors Affecting Performance - section on muscle tension and postural habits which affect performance

Table 4: Connecting Somatic Education to PDHPE Curriculum Documents.

(Alexander Technique and Feldenkrais Method practitioners are available locally) and then discuss their experience in the light of a relevant book/article which they critically review.

Student feedback

At the end of each course students are asked for feedback about the best and worst aspects of the course. Valuable feedback also comes from the student journals and project reports. The writer has often been pleasantly surprised at the creative ways students have found to incorporate what they have learned into practice. Although no formal evaluation scales were employed, it is the writer's experience that students generally prefer practice to theory. The most enjoyed workshops are the drumming and physioball workshops. Students also report positive learning experiences from the use of the posture grid, body mapping and experiential anatomy, the Feldenkrais tapes, and the semi-supine method from Alexander Technique.

Other Applications of Somatics

In addition to the Motor Learning course, the author has also found Somatic Education to be a useful experiential tool to bring courses in anatomy and physiology to life through experiential anatomy, especially when studying the postural muscles and joints (see Olsen, 1991, for numerous helpful exercises from Body-Mind Centering).

The Motor Learning course described is just one of the many ways in which Somatic Education can contribute towards enriching Physical Education in Australia. Somatic Education can be facilitated through practitioners accredited with AUSTAT or the Feldenkrais Guild. However, the disadvantage of waiting until people reach tertiary education before being introduced to somatics is that, by this stage, poor habits of posture and movement have already been established for years and are much more difficult to re-educate.

Other suggestions as to how Somatic Education may be applied to current primary and secondary PDHPE are made in Table 4. Ideally, Somatic Education could be available to children throughout their movement education.

Author Note

Dr Rosemary Faire obtained a Masters in Somatic Studies from the School of Health, Physical Education and Recreation at Ohio State University in 1988. She also studied the Somatic disciplines of Alexander Technique and Body-Mind Centering while in the USA. Returning to Sydney in 1990, she incorporated Somatic Education into her Motor Learning and Anatomy-Physiology courses at Australian College of Physical Education, Sydney, NSW. Dr Faire can be contacted at: P.O. Box 2050, Boronia Park, NSW, 2111. E-mail: roseyfaire@ozemail.com.au Phone: 02 9953 1076.

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