

THE AUTHOR

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He has taught extensively since 1974 at primary, secondary and tertiary levels, giving classes in classical ballet technique, pas de deux, repertoire and creative dance. He has also been guest teacher for numerous professional companies.

After his retirement from full-time dancing in 1982, he obtained a Certificate in Anatomy, Neuroanatomy and Physiology in Oslo and then undertook extensive studies in Dance, Psychology and the body therapies in Stockholm, obtaining a Fil. Kand (BA) and a Teaching Diploma. He then completed an MA in Dance/Movement Therapy at New York University in 1989.

He has lectured and given workshops at universities in Oslo, Stockholm and New York, and addressed the 4th Dance Medicine Congress in Kuopio, Finland.

Tony returned to Australia in August 1989 to take up the appointment of Safe Dance Project Officer for the Australian Association for Dance Education (now Ausdance) and produced the *Safe Dance Project Report* in May 1990.

As well as consulting, publishing an average of one paper per year and speaking at international conferences in Australia, New Zealand, Hong Kong, Sweden, and Finland, he was the key note speaker at Dance UK's conference 'Tomorrow's Dancers: The Changing Behaviour of the Professional Dance Teacher', after which he developed a Teachers' Enrichment program that has been successfully offered in several Australian states and overseas.

Formerly a Lecturer in Dance at Queensland University of Technology, Tony now freelances as a dance kinesiologist, teacher, consultant and therapist, facilitating Dance/Movement Therapy groups in both Brisbane and Perth, movement workshops for men with co-therapist Kevin Jeynes and continuing his Ph.D studies at the University of Queensland.

At the time of publishing this report, Tony is returning to Australia from the south of France where he has been a visiting Professor of Dance at the University of Nice-Sophia Antipolis.

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FOREWORD

Safe Dance II, researched by Tony Geeves as part of his Ph.D studies, follows the successful launch in 1990 of the first *Safe Dance Project Report*, commissioned by Ausdance.

The *Safe Dance Project Report* was an important document in the development and maturation of dance in Australia, highlighting for the first time some significant issues in the education and training of our professional dancers in relation to health issues on many levels. Of particular concern was the finding that 52% of Australian professional dancers had sustained a chronic injury by the age of 18, indicating an urgent need for further research. In fact the impact of this report on awareness and implementation of safe dance practices in Australia at professional and student level has been inestimable, with noticeable improvement in the attitude towards prevention and care of injuries since it was released.

Following the report's publication, Tony Geeves spent six years as a lecturer in the Dance Department at the Queensland University of Technology where he continued his interest in developing methodologies for safer dance training, eventually commencing doctoral studies in 1995. He committed himself to 'undertake a comprehensive survey relating to injury in adolescents in training' (Recommendation 11 of the *Safe Dance Project Report*).

This report documents research and findings into adolescent health issues during intensive dance training, with recommendations for extended dance teacher education and reassessment of the physical and psychological environment for adolescents in intensive training. It also highlights some alarming findings concerning adolescent health and lifestyle. *Safe Dance II* provides a timely reminder that, in the late 20th Century, training an individual as a versatile and flexible dance artist as well as an élite athlete requires scientific knowledge and understanding of much greater

complexity than has been required of teachers and mentors in previous generations. We need to continually update our knowledge in order to provide a supportive and safe environment so that current and future generations of dance professionals and students can equip themselves better for the ever changing challenges which a dance career in the 21st Century will present.

Australian dance teachers have trained some of the world's most highly skilled dance artists, and many teachers continue to upgrade their skills to meet increasing expectations and demands. The recent publication, *Australian Guidelines for Dance Teachers*, endorsed by more than 40 dance teaching organisations, recognises the need to maintain and extend knowledge, and *Safe Dance II* provides potent evidence of the need to remain vigilant about dance teaching practices.

Ausdance is proud to publish *Safe Dance II* and to be working with the dance teaching profession towards the development of national competency standards and supporting training packages. It is research of the calibre published by Tony Geeves in this report which provides the evidence and incentive for everyone to work together on the issues he raises.

CHERYL STOCK

National President
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SAFE DANCE II — PART ONE

National Injury and Lifestyle Survey of Australian Adolescents in Pre-professional Dance Training

by

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ABSTRACT

The purpose of this study is to:

- determine the breakdown events and factors, sites, nature and frequency of acute injuries in adolescent Australian dancers;
- identify the training practices and stages of development associated with the onset of chronic injuries in adolescent Australian dancers;
- examine the lifestyle factors (including nutrition and substance abuse) that may contribute to injury or drop-out; and finally
- make recommendations for a national strategy to reduce injury and improve health awareness in dance students.

This injury and lifestyle survey of Australian adolescents in pre-professional dance training represents approximately 50% of the population enrolled in schools and institutions invited to participate at the time of the survey. The subjects were all students studying dance techniques for a minimum of 12 hours per week (h/wk) in tertiary institutions, Colleges of Technical and Further Education (TAFE), secondary schools and specialised dance schools throughout Australia.

The procedure consisted of a face-to-face questionnaire/interview similar to that reported in the *Safe Dance Project Report*, March 1990. Descriptive statistics were compiled on qualitative and quantitative data. Of the sample population 27% were male and 73% female. The analysis revealed that the average age at onset of injury was 14.5 years. Of these injuries, 52% occurred in the first year during which the student trained more than twelve hours per week and 27% occurred during the second year of intensive training. An injury of some kind that affected their dance training had been experienced by 70%. The most common sites were back (23%), ankle (19%) and leg (17%).

About half of these students (51%) had a chronic injury and 46% reported overuse injuries, while 28% were injured within three weeks of resuming training after a break (holiday). Female students tended to have more multiple injuries than males. The most common causative factor for injuries to males was landing from a jump and for females (24%) pointe work. The most striking factor associated with chronic injury is that most dancers were already impaired by the age of 16, 28% of them did not anticipate recovery and 37% were uncertain of recovery.

The year their training load was increased by two ninety-minute sessions coincided with the year of onset of injury. This followed closely the average age (14 years) at which female dance students consulted a health professional for suspected eating disorders or weight problems and recorded their first menstruation (14 years). Clearly, this is a time of great change when students need more information on the possible consequences of disordered eating patterns, stress, menstrual dysfunction and lack of adequate active rest. Attention to graduated workload should be mandatory during the period of adolescent development and the time saved allotted to education about lifestyle factors.

This project follows the *Safe Dance Project Report* (Geeves 1990) initiated by the Australian Association for Dance Education (now Ausdance) and supported by the National Arts Industry Council (now CREATE Australia) which revealed that 65% of Australian professional dancers suffered chronic injuries and that half of these were evident by the age of 18 years.

Some investigations into dancers and their injuries described specific orthopaedic dance medicine problems without distinguishing students from professional dancers. In this type of investigation the injuries reported were those that fell within the interest or competence area of the particular individual, therefore constituting a restricted selection of material.

Two of the leading investigators (Quirk 1983 and Thomasen 1982) were both orthopaedic surgeons treating predominantly ballet dancers, the former in Australia and the latter in Denmark. Their separate longitudinal studies revealed that 60%–80% of injuries that they treated involved the ankle, knee or foot. Hamilton et al. (1992) indicated that most studies generalised from student to professional without classification, and did not differentiate between regional and national companies.

While these surveys provide a wealth of information on the clinical aspects of dance injuries, there are few studies on the overall pattern of injury or the background of causative factors, as perceived by the adolescent in dance training. This indicates a need for more clearly defined studies of specific groups and populations.

Surveys of adolescent dance students by Ryan and Stephens (1987), Tianxiang He et al. (1992) and more recently Brinson and Dick (1996), reveal a high incidence and prevalence of both acute and chronic injuries with a distribution, type and site similar to those of professional dancers.

Breakdown events closely linked in dance training (according to Ende and Wickstrom, 1992 and Khan et al., 1995) are 'faulty technique' and 'physical limits'. Bergfield et al. (1982), Gelabert (1980) and House (1972) agreed, and also included 'insufficient rest' and 'lack of a planned progressive workload' as breakdown events.

Dancing on hard floors is a causative factor contributing to injuries, according to Weiker (1981), Seale (1983), Werter (1985) and later Foley (1993). This was supported in the recent survey of adolescent dancers by Brinson and Dick (1996).

The lifestyle and risk behaviour of adolescents in dance training has been investigated by Brinson and Dick (1996) and Hamilton (1996), revealing that this is an area of concern when surveying them.

Health issues contributing to injury or drop-out of female adolescent dancers have been extensively investigated and reported upon by Warren et al. (1991), Martin et al. (1987), Brook-Gunn et al. (1988), Hamilton et al. (1989), Cann et al. (1984), Armann et al. (1990), Buchanan et al. (1992), Brinson and Dick (1996) and Hamilton (1996). It is clearly important to include such investigations in any study of dance students.

In the light of this information an urgent need was recognised for the identification of these patterns in Australian adolescents in pre-professional dance training.

Therefore the purposes of the current project were to:

- *determine the breakdown events and factors, sites, nature and frequency of acute injuries in young dance students;*
- *identify the training practices and stages of development associated with the onset of chronic injuries in adolescent Australian dancers;*
- *examine the lifestyle factors (including nutrition and substance abuse) that may contribute to injury or drop-out; and*
- *make recommendations for a national strategy to reduce injury and improve health awareness in dance students.*

The project consists of a retrospective injury and health survey of adolescent Australians in pre-professional dance training (n=701). This represents approximately 50% of the population enrolled in 37 dance training schools and institutions. The subjects were all students studying dance techniques for a minimum of 12 h/wk in tertiary institutions, Colleges of Technical and Further Education, secondary schools and specialised dance schools (studios) throughout Australia.

The procedure consisted of a face-to-face questionnaire/interview similar to that reported in the *Safe Dance Project Report* (Geeves 1990) which achieved an 86% response rate. The questionnaire, developed from the Safe Dance questionnaire was trialled in selected institutions in Brisbane and then administered in all the appropriate institutions throughout Australia. These schools and institutions are registered with The Australian Dance Council — Ausdance Inc., which agreed to support this project and arranged the details of venues and times of interviews in each state and territory. An extensive database of registered schools, institutions and teachers was at the disposal of this project. The study was conducted under strict ethical principles and was approved by the University of Queensland's Behavioural and Social Sciences Ethical Review Committee.

The investigator, who is familiar with dance training, visited 25 secondary dance schools/studios and 12 tertiary dance education institutions, representing the population of Australian adolescents in pre-professional dance training in registered schools and institutions. Although selection of subjects was not strictly random, it was adventitious, including all students attending the technique classes on the day of the survey. It is possible that some absences from class were themselves injury-related.

After being presented by the representative of the school or institution, who then left, the researcher addressed the students, informed them of the study and presented them with an information sheet which advised them about the study and their rights not to participate or not to answer any specific questions. They were informed that they might ask questions at any time. The questionnaire was then presented in a face-to-face situation to classes of up to twenty students, giving the investigator the opportunity to define the terms, answer questions, clarify anything that was unclear or open to interpretations other than intended, maintain consistency of response and minimise communication between the students. Only the investigator and the students were present. The interview for the survey took from 30 to 45 minutes. The questionnaires were completed anonymously and coded to protect the identity of the subjects and the schools and institutions in which they were trained/educated. No individual responses were to be communicated to teachers, parents or others.

2.1 Questionnaire

A questionnaire developed from the Safe Dance questionnaire was designed with reference to surveys by Bowling (1989) and Nagrin (1988) and redeveloped with reference to authors in human movement studies, the social sciences and humanities (Beed and Stinson 1985, Kane 1985, de Vaud 1991, Thomas and Nelson 1990). The questionnaire was designed to extract information concerning the causes, mechanisms, sites, prevalence, incidence and nature of injuries and identify the training practices and stages of development associated with the onset of chronic injuries. The questionnaire provided data on the breakdown event and breakdown factors, and included: age; sex; duration, intensity and level of training; menstrual patterns; aerobic and muscular conditioning; dietary and other lifestyle practices such as use of alcohol, tobacco and other substances; sleep and rest; and injury management. No information of a sensitive nature regarding such conditions as HIV infection or AIDS was collected.

The questionnaire consisted of predominantly closed questions that required no interpretation on the part of the data recorder. However, there was also a limited number of open questions to allow for the expression of a personal point of view in relation to the factors contributing to an injury.

The questionnaire was in five sections:

- General: enquiring about gender, age, height, and body mass to assist in classification; also information regarding sports or other injuries not attributed to dance;
- Dance History: establishing the type of dance training (genre) and volume of training activity (hours worked);
- Dance Injuries: identifying the type, incidence, site and prevalence of injuries and perception of causes;
- Treatment of Dance Injuries: identifying behaviour and trends in both the type of treatment received and the preferred or available medical or paramedical practitioners;
- Health: identifying lifestyle practices, particularly information about eating habits and other issues concerning dancers' health.

2.2 Injury definitions and limits

The definition of injury used by Ferrara et al. (1992) 'Any trauma to the participant that occurred during any practice, training, performing or competitive session that results in the cessation, limitation, or modification of the student dancer's participation for at least 24 hours' is comprehensive, but runs the risk of being too verbose for the adolescent. The simpler definition applied to a study of gymnasts by Sands et al. (1993) 'any damaged body part that would interfere with training' is more suitable to dance, which is also skills-specific. Like gymnasts, dancers usually continue to train in some capacity regardless of being injured because the injury relates to a specific skill or activity; thus, the

gymnast/dancer can work around it. This definition was accepted for the study.

Both acute and chronic injuries sustained over the last five years were recorded. A chronic injury was defined as damage to any body part, that interfered with training and gave continuing problems for three months or more.

2.3 Sample and response rate

Approximately 50% of the 1400 students within the appropriate category were sampled nationally, yielding n=701. Of these, 117 did not meet the criterion of 12 hours training per week and 21 returned invalid questionnaires. The effective response rate was 96%. The remaining sample (n=563) was analysed. Of the sample population, 27% were male and 73% female. The sample was divided into four groups: tertiary female (n=169, 30%), tertiary male (n=79, 14%), secondary female (n=229, 41%) and secondary male (n=86, 15%). Descriptive statistics were compiled on qualitative and quantitative data. Using a consultative approach, the investigator and the research assistant coded and cross-checked all answers. It was decided that blank spaces after a question would be coded as invalid.

3 RESULTS AND DISCUSSION

Considering the demographics, 50% of the population of adolescents in dance training was considered a satisfactory sample. The following information about the individuals, including gender, age, height, and weight was gathered to assist in classification. This enabled us to develop a profile of the Australian adolescent in pre-professional dance training (Table 1).

Although males represented only 29% of the total sample, a greater proportion of males was at tertiary level. Whereas the number of males at tertiary level was 92% of the number at secondary level, the number of females at tertiary level constituted only 72% of the number at secondary level. This suggests that males who take up concentrated dance training at secondary level are more likely than females to continue at the tertiary level.

The Body Mass Index (BMI) based on the average heights and weights for each group was less than 20 for the female students and less than 22 for the males, indicating relatively low body mass for height.

Students	Age (yrs)	Height (cm)	Body Mass (kg)
Female Tertiary n=169	20	164	52.7
Male Tertiary n=79	21	176	67.0
Female Secondary n=236	17	163	48.2
Male Secondary n=86	17	173	61.0

Table 1. Physical characteristics of Australian adolescents in pre-professional dance training (expressed in averages to nearest complete figure)

3.1 Dance history

This section describes the duration of dance training activity (90-minute training classes per week) and age at first injury. The duration of activity in the year during which the first injuries occurred is also described.

Students	Starting age (years)	Age (years) of first injury	Classes (90 min) per week
Female Tertiary n=169	7.0	16,5	10.0
Male Tertiary n=79	12.5	18.0	14.5
Female Secondary n=229	6.5	14.5	11.0
Male Secondary n=86	9.0	14,5	9.5

Table 2. Age at starting dance training, age at first dance injury and total number of 90 min dance training classes per week (expressed in averages to nearest complete figure)

It is notable that the males who continued to tertiary level had a much higher average starting age than the other groups. The tertiary students also had a much higher age at first injury. Interpretation of these data, though, needs to take into account the possibility of diminishing recall. However, the data suggest that many students who have been injured at earlier ages may have dropped out because of injury.

3.2 Dance preparation

The adolescents' preparation for dance training presents a picture dominated by the myths and legends of their sub-culture. Although 85% replied that they had 'warmed-up' before training, only 27% of these had done a cardiovascular warm-up. The remainder followed tradition and peer modelling by using stretching as their only 'warm-up'.

Four categories of adjunctive training other than dance can be defined: strengthening, stretching, aerobic activity and active relaxation (Table 3).

Students	Strengthening	Stretching	Aerobic activity	Active relaxation
Female Tertiary n=169	2	2	2	1
Male Tertiary n=79	3	3	2	1
Female Secondary n=229	2	2	1	0
Male Secondary n=86	2	2	1	1

Table 3. Hours per week of preparation in each of the adjunctive training types.

The male students spent more time per week in total, including adjunctive training. Secondary males participated in adjunctive training for a average of 5 hours per week, secondary females 5 hours, tertiary males 8 hours and tertiary females 6 hours. The time allotted to adjunctive training was spread relatively evenly over three adjunctive training categories in all four groups of students, the exception being active relaxation training, which was performed for approximately half the time of each of the other categories.

3.3 Experience of injury

The incidence, prevalence, site and type of injuries were similar to those found in professional dancers (Bowling 1989, Geeves 1990). The results demonstrated a high prevalence and incidence of injuries, both acute and chronic (Table 4).

Students	1st injury	2nd injury	3rd injury	4th injury	5th injury
Female Tertiary n=169	84%	53%	23%	7%	1%
Male Tertiary n=79	76%	24%	14%	10%	3%
Female Secondary n=229	53%	16%	7%	1%	0%
Male Secondary n=86	66%	9%	2%	0%	0%

Table 4. Percentage of Australian adolescents in pre-professional dance training reporting one or more acute or chronic injuries.

Of the sample population, 70% had experienced an injury of some kind that affected their dance training. This corresponds precisely with Ryan and Stephens' 1987 survey of dance students (70%). About half of the students (51%) in the present survey had a chronic injury and 28% were injured within three weeks of resuming training after a break (holiday). Female students tended to have more multiple injuries than males.

Of all these injuries, 52% occurred in the first year during which the student trained more than twelve hours per week and 27% occurred during the second year of intense training. The average age at which these adolescents started training twelve hours per week was 14 years.

The most striking factor associated with these figures is that 51% of the adolescent dancers were already impaired by the age of sixteen. Of these 28% anticipated recovery. Of the remainder, 37% did not anticipate recovery and 35% were uncertain of recovery.

The fact that 35% of those with a chronic injury did not expect to recover may explain the prevalence (32%) of dancers suffering chronic injuries when they enter the profession (Geeves 1990).

Many of the students had been injured outside the dance studio (Table 5). Some sustained injuries while participating in sport and others were injured as part of other everyday behaviour. Contrary to the findings for dance injuries (Table 4) a higher percentage of males than females was injured in activities outside dance. The much smaller percentage of students injured in sport may be due to a smaller commitment in time or intensity to their sports compared with their dance commitments.

Students	Participated in sports	Sports injury	other injury	injured in both categories & dance
Female Tertiary n=169	74%	13%	12%	9%
Male Tertiary n=79	69%	25%	17%	13%
Female Secondary n=229	75%	28%	16%	13%
Male Secondary n=86	70%	44%	25%	26%

Table 5. Percentage of students reporting sports participation and injuries not attributed to dance training.

Taking into account the whole sample (n=563), 72% participated in sport and 35% of these suffered a sports-related injury, whilst 15% suffered an injury in both sport and dance and 18% suffered an injury when participating in an unrelated activity. In all three categories (sport, dance, other injury) there were 1% of secondary males that sustained an injury of the same type.

The predominance of injuries to the lower back in a population of adolescents in dance training, as reported by Ryan & Stephens (1987), Tianxiang He et al. (1992) and Brinson & Dick (1996), is reflected in these results. Most (23%) of the reported dance injuries were to the back (Table 6). The tertiary males had by far the greatest percentage of back injuries (40%). At this stage in their career, lifting

other dancers occupies a greater proportion of their training.

Ryan & Stephens (1987), Tianxiang He et al. (1992) and Brinson & Dick (1996), reported that ankle and foot injuries were collectively more frequent than knee injuries, which is also true of this study. On the other hand, females in both secondary and tertiary groups had more knee injuries than the male students.

Students	Anatomical site							+
	Back	Hip	Ham-string	Knee	Leg	Ankle	Foot	Various
Female Tertiary n=169	12%	5%	8%	10%	16%	19%	12%	18%
Male Tertiary n=79	40%	5%	9%	4%	9%	22%	9%	2%
Female Secondary n=229	17%	5%	5%	14%	17%	20%	6%	15%
Male Secondary n=86	21%	5%	13%	4%	25%	13%	4%	15%

Table 6. Percentage of injuries occurring at different anatomical sites.

Musculo-tendinous injuries were most common (51%), followed by injuries to ligaments and joints (21%) and stress fractures (7%).

3.4 Treatment behaviour

This section identifies behaviour patterns in both the choice of the type of treatment received and the preferred or the available medical or paramedical practitioners from whom treatment was obtained.

Ice was applied by 29% of the population on a soft tissue injury, but 47% continued training on the injury (Table 7) and did not rest, despite the fact that the practice of 'Rest, Ice, Compression, Elevation and Diagnosis' (R.I.C.E.D.) is taught in secondary schools throughout Australia. This concept is now

referred to in the Red Cross *First Aid Handbook* as C.E.R.I. (Compression, Elevation, Rest and Ice).

Approximately half of the population continued to train, although injured, in spite of the information available at all levels. It is evident that the theatrical tradition of 'the show must go on' is still part of the ethos of the dance training. The myths of the profession are being handed on in the dance classes and children are obeying their dance teacher despite the education they are receiving in school with regard to practices such as RICED.

Students	Stopped dancing	RICED	Carried on	Combined	Invalid
Female Tertiary n=169	30%	14%	37%	15%	4%
Male Tertiary n=79	17%	31%	35%	13%	4%
Female Secondary n=229	31%	11%	50%	6%	4%

Table 7 Behaviour after injury

More than half (56%) of the students reported that they felt pressured to keep going (Table 8). It was the tertiary males who felt the most pressure (78%) and the secondary males who reported feeling the least (33%).

In a population that requires active characteristics like perseverance, self-discipline and courage, the other side of the coin is a training system that rewards passive characteristics such as willingness to fit into the hierarchical dance world, willingness to be told what to do and willingness to be corrected (Buckroyd 1991). This 'taming' of the students (Geeves 1993), which makes them dependent on an external locus of control, rather than motivated by an internal locus of control, could influence their perception of external pressures.

The relationship between psychological factors and injury in dancers is central to the thesis of the Swedish researcher Ramel (1991). One of her main questions related to 'the association between

troubles from the musculoskeletal system and perceived work situation'. The study showed that 60% of the dancers felt completely governed by others in their training (external locus of control).

In a culture as hierarchical as dance, the teachers, rehearsal directors and choreographers need to be made more aware of the pressures, expressed in both verbal and non-verbal ways, to which the students are reacting.

Female secondary students (2%) were the only group that reported pressuring themselves (Table 8). The personal pressure that 'over-achievers' exert upon themselves (Hamilton et al. 1989) could be responsible for the behaviour reported by this percentage of the secondary females. Hamilton et al. (1989) state that the personality traits that characterise the 'over-achiever' and lead to success in the profession may contribute to injuries when carried to extremes. The older students may have internalised this and no longer recognise it as their own decision.

Students	No	Pressured by others	Self pressure	Invalid
Female Tertiary n=169	67%	53%	0%	10%
Male Tertiary n=79	18%	78%	0%	4%
Female Secondary n=229	35%	58%	2%	4%
Male Secondary n=86	66%	33%	0%	0%

Table 8. Did you feel pressured to keep going after being injured?

One quarter of the adolescents consulted a qualified medical practitioner some time after the injury (Table 9) but, even so, it took one person sixty days to seek advice. Although 58% did consult a

physiotherapist, only 16% consulted a physician as first choice.

Brinson and Dick (1996) reported that 55% of the student dancers consulted a physiotherapist and 23% consulted a general practitioner (GP). This pattern is similar to that of professional dancers. Australian professional dancers (Geeves 1990) chose physiotherapists (58%) rather than GPs (31%). It may be that dance teachers are recommending a personal preference. Physiotherapists are usually on call at tertiary dance institutions, thereby minimising the students' loss of time while consulting. It may also be that the physiotherapist's physical treatment is more readily accepted by dancers.

Students	GP	Physio	Specialist	Osteopath	Alternative
Female Tertiary n=169	21%	46%	6%	9%	27%
Male Tertiary n=79	13%	62%	13%	0%	12%
Female Secondary n=229	10%	60%	5%	0%	35%
Male Secondary n=86	21%	63%	0%	0%	16%

Table 9. First choice of professional consultation after an injury

Of those that consulted a qualified medical practitioner, only 50% of the females were satisfied with the amount of information they were given, whilst 63% of the males in the same group were satisfied. One third (33%) reported that the medical cause of the injury was not made clear to them and 28% stated that the treatment was not made clear to them. Of those questioned 30% felt that they were unable to get informed advice on any decisions they needed to make on the effects of a long term injury.

This apparent lack of verbal communication between the students and their medical and para-

medical practitioners may be related to the years of dance training in an atmosphere where questioning by the students is not encouraged (Geeves 1993) or to the inability of qualified medical and para-medical practitioners to explain in terms readily understood by their adolescent patients. Including verbal interpersonal communication skills in the training for the dance profession and the medical and para-medical professionals could improve this situation.

Students	Yes	No	Invalid
Female Tertiary n=169	44%	27%	9%
Male Tertiary n=79	70%	26%	4%
Female Secondary n=229	56%	33%	10%
Male Secondary n=86	56%	33%	10%

Table 10. Were you given as much information as you wanted by the medical or paramedical practitioner?

3.5 Breakdown events

When dealing with full -time dance students it is not surprising to find that 37% of their dancing injuries occurred during dance class (Table 11), which is where they spend a minimum of three hours training each day. The conclusion of Khan et al. (1995) that 'treatment of the ballet dancer needs to be directed to correcting underlying technical problems' suggests that there is already an awareness of the issue amongst leading Australian dance medicine authorities.

However, in the light of this survey it is apparent that this is only one of the factors that need to be addressed. Another important factor is the attitudes and training of people in positions of authority that influence the behaviour and control the workload of

adolescents in pre-professional training — particularly those in charge of the training class where the majority of injuries occur.

Students	Class	Rehearsal	Performance	All three categories (overuse)	Other
Female Tertiary n=169	38%	9%	4%	48%	1%
Male Tertiary n=79	37%	17%	0%	46%	0%
Female Secondary n=229	37%	11%	4%	43%	5%
Male Secondary n=86	38%	13%	0%	49%	0%

Table 11. Where did your injury take place?

Approximately half (46%) of the adolescents reported being injured over a period of time (overuse injuries rather than a traumatic incident), which was evident in all aspects of the training. Clearly the identification, reporting and treatment of these injuries requires a framework and a systematic approach to assist the student and protect the teacher. This makes effective technique as well as progressive workload and planned rest times essential, according to Bergfield et al. (1982), Gelabert (1980) and House (1972).

Perceived breakdown events such as 'faulty technique' (39%) and 'physical limits' (14%) are dependent on the self evaluation of the individual (Table 12). These two breakdown events are closely linked in ballet training according to Ende & Wickstrom (1982) and Khan et al. (1995).

Inadequate or maladaptive dance technique that may be a result of ineffective teaching or learning is also considered to be a cause of injury (Howse 1972, Wright 1985, Khan et al. 1995). Attribution of an injury to faulty or poor technique (39%) involves self evaluation and may be connected to the issue of self-esteem. When taking such responsibility a

dancer may be aware of technical faults but may also be unduly self-critical. Learning to distinguish between these two extremes may require the support and pastoral care of an empathetic teacher or the services of a counsellor, but ultimately it is in the hands of the individual. Schools and institutions responsible for the education and training of adolescents need to ensure that their students have access to a qualified counsellor.

Students	Fatigue	Overwork	New technique	Shoes	Faulty technique	Physical limits
Female Tertiary n=169	17%	19%	4%	3%	41%	14%
Male Tertiary n=79	32%	33%	4%	0%	40%	12%
Female Secondary n=229	18%	44%	4%	2%	38%	14%
Male Secondary n=86	13%	28%	0%	5%	37%	16%

Table 12. Perceived breakdown events

Although 31% of the students reported feeling overworked, only 20% complained of fatigue (Table 12). 'Fatigue/overwork' were combined by Brinson and Dick (1996) as perceived causes, revealing that 52% of the students perceived this as a breakdown factor. This is similar to the combined answers in the present study.

As suggested by Gruen (1976) and reinforced later by Hinckfuss (1996), a continuing of the tradition of a *culture of pain*, in which dancers are expected to suffer in silence, may well be responsible for these perceptions.

The students' perception that overwork/fatigue are responsible for approximately one half of injuries must be taken seriously by course directors, planners, teachers and production managers. Although they are often exposed to pressures created by the curriculum or the anxieties of

choreographers or rehearsal directors, they have a responsibility for the health and safety of the dancers and need to plan accordingly.

In both of these groups the individuals involved may need to seek the advice of an exercise physiologist while extending their own knowledge in the area of graduated workload (sometimes referred to as training progression) involving the training principles of Frequency, Intensity, Time and Type.

Most tertiary institutions in Australia that offer a dance course would also have access to an exercise physiologist in another department. It has become a necessity that these resources are identified and used appropriately.

3.6 Causative factors

Although the generic term 'accident' was reported by 18% of the students, there were others able to differentiate this from the 'accidental fall', which accounted for 12% of injuries, and the 'choreographed fall' (2%) reported in Table 13. These combined figures (32%) are similar to those reported in Tabel 12 for 'overworked' (31%) as a breakdown event. Three types of accident-proneness seem to stand out: actually being injured; imagining being injured; and faking an injury (Ogilvie 1966). This issue needs further investigation.

Five percent of the students described surfaces as a causative factor. A number of injuries in the lower extremities, such as posteromedial shin splints, medial ankle tendinitis and tenosynovitis, Achilles tendinitis, plantar fasciitis and tibial stress fractures are attributed to dancing on hard floors according to Weiker (1981). Werter (1985) is less specific, but quotes dance floors as a causative factor in dance injuries. In studies of dance surfaces by Seale (1983) and later Foley (1993) there is a consensus that a percentage of key injuries could be lowered if a standard for surfaces were established.

Students	Fall	Choreography	Landing	Lifting	Lifted	Pointe	Accident	Other
Female Tertiary n=169	13%	5%	23%	2%	5%	24%	12%	9%
Male Tertiary n=79	17%	0%	17%	25%	0%	0%	12%	8%
Female Secondary n=229	12%	2%	20%	0%	2%	7%	21%	13%
Male Secondary n=86	4%	0%	46%	4%	0%	0%	25%	18%

Table 13. Perceptions of causative factors

Landing from a jump accounts for 27% of the overall injuries. This figure is by far the highest in secondary boys (46%) who may not have developed the level of physical maturity necessary to sustain the workload.

The incidence of injuries (24%) in females doing pointe work is similar to the incidence of injuries (25%) in males when lifting. It is interesting to note that where the division of labour is relatively equal (but on different aspects of technique) the injury rate is alike. Particular attention needs to be directed to these aspects of gender-specific training, where the principles of graduated workload should be applied in order to avoid injury.

3.7 Health

The eating habits of adolescents in Australia are under constant scrutiny. This section describes those habits in the particular milieu of the adolescent dance student.

Although Australian adolescent dance students in pre-professional training have a relatively low body mass for height (Table 1) their perception of themselves does not reflect this reality.

Of the female students, 58% reported that they were satisfied with their present weight, whilst 40%

felt that they were overweight. This distorted perception of their body image needs to be addressed. In the remaining secondary female students 38% felt that they were overweight (Table 14).

Students	Satisfied	Underweight	Overweight	Invalid
Female Tertiary n=169	56%	2%	42%	2%
Male Tertiary n=79	69%	17%	10%	3%
Female Secondary n=229	59%	2%	38%	1%
Male Secondary n=86	78%	11%	11%	0%

Table 14. Students' perceptions of their present weight expressed in percentages

The patterns of behaviour that are developed in an attempt to control this important part of the dance student's life are many and varied. An overview of their eating behaviours reveals some of their choices (Table 15).

Student	Currently causing self to vomit	History of self-induced vomiting	Weight loss diet in the last year	Use of pills, laxatives & diuretics	Thought they had an eating disorder	Consulted a health prof. for an eating disorder
Female Tertiary n=169	16%	33%	56%	36%	33%	21%
Male Tertiary n=79	9%	7%	14%	8%	7%	10%
Female Secondary n=229	24%	19%	53%	36%	18%	16%
Male Secondary n=86	9%	3%	12%	14%	14%	3%

Table 15. Reported eating behaviours.

The average age at which the female dance students first consulted a health professional regarding suspected eating disorders was 13.47 years.

One half of these students ate only one meal per day and one third ate less than three meals per day. Having eaten, these same students chose either self-induced vomiting (female 20%, male 9%), a range of pills, diuretics or laxatives (female 36%, male 11%) or restricted eating in an attempt to control their weight (female 54%, male 10%). As revealed in Table 15, these pathogenic weight control methods touch on both clinical and sub-clinical descriptions of eating disorders as described in the American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders* (1987), and sub-clinical descriptions as investigated by Sundgott-Borgon et al. (1987 and 1992) and Beal et al. (1994).

To the question 'Do you have a past history of self-induced vomiting?', 14% of female secondary students gave no answer. This reluctance to answer such a revealing question may indicate that the percentage with a past history of self-induced vomiting is in reality similar to that of the tertiary females. The figures in Table 15 reveal that, although there is an increased consciousness of these problems in tertiary females, there are still 12% who have not consulted a health professional despite the fact that they personally think they have an eating disorder. This indicates a degree of denial or lack of awareness in their relationship to disordered eating habits, eating disorders and their possible consequences. For example, 24% of the secondary females are currently causing themselves to vomit but only 18% think they have an eating disorder.

In tertiary females 16% are currently causing themselves to vomit. However 33% had a past history of vomiting and 33% thought that they had an eating disorder. These figures represent a more conscious awareness of their situation.

The relationship between nutrient intake, body mass index, menstrual function and ballet injury has been investigated by Benson et al. (1989) who also reflected previous studies showing that there is a relationship between these factors. Information obtained showed that the dancers suffering from irregular/abnormal menstrual patterns tended to have an increased risk of bone injuries. Another significant result was that those with a low BMI were more inclined to suffer a higher percentage of low grade injuries, increasing the number of days they were unable to dance.

3.8 Lifestyle practices

This section deals with the adolescent dance students' recreational pursuits and attempts to care for themselves.

Student	Non prescription	Homeopathic	Vitamins	Health supplements
Female Tertiary n=169	8%	6%	51%	21%
Male Tertiary n=79	10%	14%	41%	17%
Female Secondary n=229	8%	6%	60%	16%
Male Secondary n=86	14%	6%	50%	19%

Table 16. The use of non-prescription drugs, vitamins and health supplements

The figures in Table 16 represent the percentage of students who take vitamins, homoeopathic cures and health supplements. These students sleep an average of 8 hours per night, which could be perceived as an effort to care for themselves.

Both health supplements and vitamins were taken by 16% of the students. Of this group 13% were also taking non-prescription drugs and 5% were taking all four remedies.

There seems to be a conflict here between the concept of an active engagement in 'well-being' (i.e., the taking of health supplements, homeopathic remedies and possibly vitamins) and the need to reduce levels of discomfort with over-the-counter drugs.

Table 17 reveals that 13% of the secondary school dance students smoke cigarettes. The figure for the male students at tertiary level is 30% higher than that of males at secondary level. Female students at tertiary level also smoke more (13%) than their secondary counterparts. Further analysis of the recreational use of this and other drugs, when viewed in concert with other lifestyle factors, may reveal important information concerning risk behaviour or peer group pressure in these adolescents. The other concern is their lack of sufficient knowledge in this area to enable informed decisions.

Students	Prescription medication	Marijuana	LSD/speed ecstasy amphetamines	Smoking
Female Tertiary n=169	40%	18%	11%	25%
Male Tertiary n=79	30%	14%	7%	41%
Female Secondary n=229	16%	9%	3%	15%
Male Secondary n=86	20%	6%	0%	11%

Table 17. Prescription medication, the recreational use of drugs and cigarette smoking

Ten percent of females who used marijuana did not smoke cigarettes. However, 45% of the cigarette smokers also used marijuana. Of these, 42% used LSD, speed, ecstasy and/or amphetamines. Covington et al. (1982) also reported that a greater percentage of adolescents who experimented with cigarette smoking also experimented with other drugs. Substance abuse is one of the most common adolescent risk-taking behaviours (Blum

et al. 1987, Tonkin 1987). According to Irwin et al. (1986) and Werner et al. (1991), performing arts students who participate in these lifestyle choices represent a high risk group because of stress, competitive pressures and low self esteem. However this does not take into account personality types or family systems. The effects of these types of drugs on the developing adolescent are as yet unknown.

There was an increase (Table 17) in usage from secondary to tertiary level in both categories, despite the fact that cigarette smoking and drug use are considered to be major contributing factors to ill health and injury. The British National Inquiry into Dancers' Health and Injury (1996) suggested that 'Consciously or unconsciously, they may use smoking as an appetite depressant', thereby linking this behaviour to the pathogenic weight control methods mentioned in Table 15. Education targeted specifically at this group is needed to counteract this risk-taking behaviour.

There were 41 types of prescription medications covering a wide range of remedies listed by 35% of the tertiary and 18% of the secondary students. However the four main groups were asthma, contraceptive, antibiotic or anti-inflammatory medications (Table 18).

Students	Asthma	Contraceptive pills	Anti-biotics	Anti-inflammatories	Others
Female Tertiary n=169	36%	47%	8%	8%	8%
Male Tertiary n=79	7%	0%	0%	3%	7%
Female Secondary n=229	15%	19%	16%	11%	14%
Male Secondary n=86	17%	0%	0%	14%	3%

Table 18. Percentage of respondents currently taking prescription medication

Despite the high incidence and prevalence of injuries, both acute and chronic (Table 4) only 11% of the population reported using anti-inflammatory medication.

3.9 The female dance student

Although many of the difficulties of the adolescent are common to both genders, this section describes some of the issues that are particular to the female adolescent dancer in pre-professional dance training.

The majority of tertiary (95%) and secondary (80%) female students interviewed had begun to menstruate at the time of this survey. The late average starting age — 13.5 years — is to be expected in this population (Frisch et al. 1980) and is also common for elite female athletes with equivalent psychophysical demands. The average age of menarche was 12.1 years for those involved in a study on leisure physical activities by Moisan et al. (1991) who stated that those involved in dance, athletics, gymnastics and figure skating were predisposed to a higher age of onset.

The level of menstrual dysfunction in female dance students surveyed revealed (Table 19) that more than half the population (59%) had oligomenorrhoea (irregular periods) and 37% had amenorrhoea (three months ceased). Despite this, the awareness of possible effects was extremely low (53%).

Students	Irregular periods	Amenorrhoea (3 mths ceased)	Awareness of possible effects
Female Tertiary n=169	73%	41%	62%
Female Secondary n=229	45%	32%	43%

Table 19. Menstrual history of female students.

As the prevalence of menstrual dysfunction increased with age (tertiary students 73%), so did the awareness of the possible effects (62%). While this is a positive development there clearly needs to be more information on possible effects offered at a younger age.

The lack of awareness of the possible effects of menstrual dysfunction could be of particular consequence in this population. It is suspected that females suffering from amenorrhoea do not lay down sufficient bone, leaving them open to stress fractures in the growing period and the potential risk of osteopenia, osteoporosis or sterility later in life (Drinkwater et al. 1984, Warren et al. 1991, Martin et al. 1987, Armann et al. 1990, Brook-Gunn et al. 1988, Brook-Gunn et al. 1987, Buchanan et al. 1992, Cann et al. 1984 and Horvath et al. 1989).

Students	Diet	Excessive exercise	Eating disorder	Stress	*Combined	Don't know
Female Tertiary n=169	16%	24%	9%	15%	36%	0%
Female Secondary n=229	11%	25%	0%	17%	29%	18%
*Combined: diet, excessive exercise, eating disorder and stress						

Table 20. Perceived causes of menstrual dysfunction

The most commonly perceived cause of menstrual dysfunction (Table 20) is a combination of diet, excessive exercise, and stress (33%). MacKinnon (1993) agrees that in fact the cause may well be a combination of factors. The remainder perceived excessive exercise (24.5%) stress (16%) or diet (14%) to be the cause. These figures are much higher in the study of Brinson and Dick (1996) (stress 48% and diet (26%). However, in an earlier paper by Prior et al. (1990) it is demonstrated that when factors such as stress, anorexia and reproductive immaturity are discounted even intensive training for a marathon caused no changes in menstrual patterns over twelve months.

There is no doubt that female dancers and athletes experience a higher rate of menstrual irregularities than the general population of reproductive age. Lutter & Cushman (1982) indicated that while 5% of the non-athletic population of reproductive age experienced irregular menstrual cycles, the figure was as high as 60% in elite female athletes. This is similar to the combined female populations in this study (59%).

Institutions and schools should educate students and staff on issues surrounding menstrual dysfunction.

The purpose of this study was to collect information concerning the adolescents' perception of the causes, mechanisms, sites, prevalence, incidence and nature of injuries and identify the training practices and stages of development associated with the onset of chronic injuries to Australian adolescents in pre-professional dance training.

The analysis revealed that the average age at onset of injury was 14.5 years and this was the same year as their training load was increased by two ninety-minute sessions as opposed to an increase of one ninety-minute session each year from the age of eleven. This needs to be seen in relation to the average age (13.5 years) at which the female dance students consulted a health professional for suspected eating disorders or weight problems and recorded their first menstruation. Clearly, this is a time of great change when students need more information on the possible consequences of disordered eating patterns, stress, menstrual dysfunction and lack of adequate active rest. Attention to graduated work load should also be considered particularly by those responsible for planning schedules in dance schools and institutions.

So-called overuse injuries (micro trauma) were responsible for 47% of the injuries which occurred over a period of time. Of these injuries, 52% occurred in the first year during which the student underwent more than twelve hours per week of intensive training. This would also suggest a need to revise training practices during this period as well as training students to understand early warning signs for this type of injury.

The figures indicate that the adolescents attempt to care for themselves by taking vitamins, homoeopathic cures, health supplements and sleeping an average of 8 hours. However, on the other hand there is a 20% increase in the habit of smoking by the time these students reach tertiary

level and the number involved in the recreational use of drugs has doubled in the same period.

This dichotomy, when viewed in concert with other factors, such as eating behaviours and their perceptions of their own body mass, is disturbing. The denial or lack of consciousness as to what constitutes disordered eating patterns or eating disorders as well as their naiveté in relationship to menstrual dysfunction and its possible effects are cause for alarm. The need for educational programs is obvious.

The continuation of the traditional 'culture of pain' is also cause for concern, particularly when linked to the communication difficulties. These areas of student autonomy need to be looked at in conjunction with the training and education.

Adjunctive training is now clearly established in this population. However, the importance of active relaxation techniques (rest) has not reached the same level of consciousness, particularly in the tertiary and secondary females and secondary males. The need for more focus on active relaxation has to be addressed by both the student and the institutions and schools which they attend. The concept of a 'rest day' before performances or important events should be introduced.

The experiences of Australian adolescents in pre-professional dance training, reported here, suggest a compelling need for critical investigation of the methods of training not only dance students, but also teachers, rehearsal directors, administrators and production managers.

5.1 Schools and Institutions

Schools and institutions that are responsible for the education and training of adolescents in pre-professional dance training should:

- provide access to a qualified counsellor/psychologist.
- provide access to an exercise physiologist for staff and students.
- encourage students in their care to get immediate treatment for injury
- introduce mandatory graduated work load practices for students:
 - (a) on return to training after a break (holiday) of more than 72 hours.
 - (b) during adolescent development (approximately age 13–15 years depending on the individual).
 - (c) for gender specific technique training.
- target specifically pathogenic weight control methods with education, in order to counteract the risk-taking behaviour.
- provide education for staff and students on issues surrounding menstrual dysfunction.
- include verbal interpersonal communication skills into their training programs.
- encourage the medical and paramedical professionals that come into contact with their students to become more aware of the difference verbal interpersonal communication with adolescent dancers.

5.2 Adolescents in pre-professional dance training

Adolescents in pre-professional dance training should:

- know how to relax/rest.
- utilise access to a qualified counsellor/psychologist.
- utilise access to an exercise physiologist
- get immediate treatment for injury
- discuss a graduated work load with their teachers:
 - (a) on return to training after a break (holiday) of more than 72 hours
 - (b) during the window period of adolescent development (approximately age 13–15 years depending on the individual).
 - (c) for gender specific technique training.
- seek information on healthy methods of weight control and understand adolescent risk-taking behaviour.
- seek information on issues surrounding menstrual dysfunction.
- be aware that the medical and paramedical professionals that they come into contact with are eager to listen and explain.

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**List of Schools, Studios and
Institutions visited:**

Canberra Youth Ballet School
National Capital Ballet School
Dance Development Centre
Dell Brady Ballet School

The Dance Factory
Victorian College of the Arts Secondary School
Victorian College of the Arts, University of
Melbourne
Box Hill College of TAFE
National Theatre Ballet School
The Australian Ballet School

University of Tasmania

The Centre for the Performing Arts
Susan Taylor School of Dance
University of Adelaide
Terry Simpson Studios
Sheila Laing Dance Centre
James College
Dance Craft Studio

Graduate College of Dance (WA) Inc.
Balcatta State High School
WA Academy of Performing Arts, Edith Cowan
University
The Ballet School
Hampton SHS
Waldron Academy

Dynamite (now Brent Street School of Performing
Arts)
Newtown School for Performing Arts
Halliday Dance Centre
University of Western Sydney, Nepean
The Macdonald College
Ecole Classique

Queensland Dance School of Excellence
Queensland University of Technology
Brisbane Dance Centre

SAFE DANCE II — PART TWO

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A Comparison with the *Safe Dance Project Report* (Geeves 1990)

Trends in the Australian dance population

The questionnaire used as a research instrument in the present survey of Australian adolescents in pre-professional dance training was similar to the original questionnaire used for the *Safe Dance Project Report 1990* (Geeves). However the parameters for the population were different, due to the age group and training demands.

Despite this, it is possible to identify hypothetical trends in the incidence and prevalence of injuries and compare some lifestyle factors of both populations from student to professional dancer in the overall Australian dance population and in this way plan appropriate interventions.

The original *Safe Dance Project Report 1990* is currently being followed up by Crookshanks, D. (Sydney University) using the same methodology to ascertain the present incidence and prevalence of injuries in the professional dance population.

Responses

A hallmark of both surveys is the high effective response rate: 96% in the student dance population and 86% in professional dancers. No attempt has been made to determine whether this results from such observed active characteristics of this population as perseverance, self-discipline and courage, or whether it is the consequence of training systems that reward passive characteristics 'such as a willingness to fit into the hierarchical dance world, a willingness to be told what to do, and a willingness to be corrected' (Buckroyd 1991).

This 'taming' of the students (Geeves 1993) — making them dependent on an external locus of control rather than training them to be motivated by an internal locus of control — could influence their

responses, particularly as the investigator (equated with an authority figure) was in the room to conduct the survey.

Of the sample population of adolescents in pre-professional dance training, 27% were male and 73% were female, while in the professional population there was a far more even balance, with 42% male and 57% female.

This gender bias towards females in the dance student population may be the result of attitudes and prejudices of the dominant culture with regard to dance and masculinity. Parenting figures making decisions for the child may give dance a low priority. Peer pressure also may be too hard for early adolescent males to withstand, whereas adult males can make their own choices.

This issue has been the focus of some attention (see 'Danceplay', page 72, a paper given at the daCi conference 'Kindle the Fire') and is currently being addressed in Australia by summer courses and workshops being offered particularly for male students and dancers in both Sydney and rural NSW, where the role models are male.

Chronic injuries

As can be clearly seen from Table 1 there is a progression in the incidence of chronic injuries suffered by Australians involved in the dance industry (keeping in mind that these surveys are six years apart).

Gender	All pre-professionals	Professionals (18 years)	All professionals	Professionals (25 years)
Total population	35%	52%	65%	75%
Male	50%		42%	
Female	50%		58%	

Table 1. Three stages of the Australian dance population suffering chronic injuries, expressed in percentages

Site of injuries

With the exception of injuries to the hip, there is hypothetically a progression of 69% in the increase of injuries from adolescents in pre-professional dance training to professional dancers. These figures are a warning sign that an intervention is needed if the figures for professional dancers have remained constant.

Population	Back	Hip	Knee	Ankle	Foot
Adolescents	23%	5%	8%	19%	8%
Professionals	34%	4%	13%	23%	12%

Table 2. Anatomical site of injury

Considering the information gathered in the literature search and the very nature of dance, it is not surprising that injuries to the lower limbs dominate Table 2. The increase demonstrates where the focus of attention needs to be when planning interventions.

Any structural deviation may contribute to an injury. A sprained ankle, a damaged knee or an injured foot may result in a temporarily changed alignment. If the individual continues to dance aligned in this new way, back injuries may be the result. This is the time when adjunctive training that is non-weight-bearing is indicated, i.e. Pilates, Feldenkrais or Yoga.

The importance of pelvic stability can not be over-emphasised (Phillips 1994). When the pelvis is unstable the structural deviation may also lead to injuries, this time in the lower limbs. The answer to both of these difficulties is strength training for the appropriate areas. Exercises must be performed on a regular basis — being aware of them is not enough.

Type of injury

Population	Ligament/joints	Musculo-tendinous	Bones
Adolescents	21%	51%	7%
Professionals	34%	33%	12%

Table 3. Type of injury

Population	Class	Rehearsal	Performance	Over a period of time	Occurred within 3 wks of a break
Adolescents	37%	13%	1%	46%	28%
Professionals	15%	42%	29%	10%	14%

Table 4. Where the injury took place

The comparison (Table 4) of the incidence of injuries reported as occurring in class (adolescents 37%, professional 15%) and rehearsals (adolescents 13%, professional 42%) reflects the differing amounts of time spent by these two groups in these arenas. These are the areas where interventions are likely to have most effect.

The incidence of injuries occurring within three weeks of a break from training was reported by both groups (Table 4). Adolescents were at greater risk, with double the rate reported by the professionals. This is where the practice of graduated work load needs to be incorporated. Summer schools, intensive training sessions and the beginning of a new course or semester — before which the dance students have had a break of more than 72 hours from their normal training load — need to be reassessed and adapted by educators/teachers, trainers and course directors. The same consideration needs to be given to professional dancers returning to work at the beginning of a season or project by directors, planners and production managers.

Micro trauma or injuries occurring after a break in training of three weeks were reported by both groups. These are a matter of concern, particularly in the adolescent population. The inability of the adolescent to identify or make known to a person in authority the beginning signs of this type of injury requires specific attention (see 'The difference between training and taming the dancer', page 84).

Perceptions of the causes of injury (breakdown factors)

Population	Overwork/ fatigue	New technique	Faulty/ poor technique
Adolescents	26%	3%	18%
Professionals	26%	21%	15%

Table 5. Perceptions of breakdown events

The dancers' perceptions that overwork/fatigue are responsible for approximately one quarter of injuries in both groups must be taken seriously by course directors, planners and production managers. Although they are often exposed to pressures created by the anxieties of the choreographer or the rehearsal director they have a responsibility for the health and safety of the dancers and need to plan accordingly.

In an endeavour to equip the student for future employment, the concerned dance educator/teacher/trainer may perceive the need for an expanded time frame (studio contact hours) that exceeds the limit of other disciplines with similar physiological and psychological needs. Or the individual dance educator/teacher/trainer may demonstrate a personal need to maintain what they consider to be professional standards. In less secure individuals this could be an unconscious demonstration of power — or created to generate tension to replace the lack of excitement in their lives now that they are no longer performing. Any or all of these factors may overload the physiological

and psychological resources of the student which can lead to injury.

In both of these groups the individuals involved may need to seek the advice of an exercise physiologist while extending their own knowledge in the area of graduated workload, sometimes referred to as training progression, involving the training principles of Frequency, Intensity, Time and Type (FITT).

The topic of 'Faulty or Poor Technique' (Table 5, adolescents 18%, professionals 15%) is about self evaluation and may be connected to the issue of self esteem. Taking responsibility is a two-way street. The dancer may be justly aware of technical faults, or may be *unjustly* self critical and take responsibility no matter how little deserved. Learning to distinguish between these two extremes may require the services of a counsellor or an empathetic teacher, but ultimately the matter is in the hands of the individual.

Behaviour after injury

Population	Carried on after injury	Applied ice after injury	Consulted Physiotherapist	Consulted GP
Adolescents	47%	19%	58%	16%
Professionals	57%	20%	58%	31%

Table 6. Behaviour after injury

With approximately half of both populations (adolescents 47%, professional 57%) willing to carry on regardless of or in spite of the information available at all levels, it is evident that the theatrical tradition of 'on with the show' seems to be still part of the ethos of the dance profession, from early training to retirement. Is this the direct result of performers retiring into teaching without evaluating their own experience and personal process?

The application of ice to a soft tissue injury (adolescents 19%, professionals 20%), which has now become a standard for the general population

in both sport and education, is still largely ignored by the profession at all levels. This indicates that the outmoded myths of the profession are being handed on in dance classes despite the education that children are receiving in schools with regard to practices such as Rest, Ice, Compression, Elevation and Diagnosis (RICED). It also suggests that adolescents or their teachers may not be transferring learning from one discipline to another. It may be important to consider that dance is a slice of life, not the whole loaf!

General Practitioners are not widely consulted by professional dancers (professionals 31%) and even less by the students (adolescents 16%). Physiotherapists are the preference of both groups (58%) although an absence of interpersonal communication or lack of feedback is perceived (30% adolescents, 34% professionals). This problem appears to be endemic in the healing professions that are treating this population.

The healing process

Population	Anticipated recovery	Did not anticipate recovery
Adolescents (impaired by the age of 16 years)	28%	37%
Professionals (impaired by the age of 18 years)	34%	35%

Table 7. Perceptions of the healing from chronic injuries expressed in percentages

There is a constant here of approximately one third of both populations that has no faith in the medical profession's opinion that, in normal circumstances, soft tissue injuries heal. There may be a combination of issues here that prohibit the healing of these people.

Their inability to rest an injury for sufficient time to allow the healing process to take place seems to

me to be the most obvious — or could this be a form of self inflicted punishment for what they may perceive as a less than adequate technique? There is the possibility that it is a 'psychic crouch' to vindicate themselves, their parenting figures or mentors, as to why they are not more accomplished dancers. It may be the fear of success that is keeping them injured, or the secondary gain of constant attention from the healing professions and their colleagues. More simply, it may be a question of economy that is keeping them from treatment. Regardless of which solution is appropriate, it has to be found and owned by the individual before it can have any lasting effect.

Female dancers

Population	Oligomenorrhoea (Irregular periods)	Amenorrhoea (3 months ceased)
Tertiary females	73%	41%
Secondary females	45%	32%
Total adolescent females	59%	37%
Professionals	36%	70%

Table 8. Menstrual history in percentage terms

Amenorrhoea amongst athletes was first recognised in the late 1970s. Training intensity and caloric restriction in athletes are two important factors (Wolman 1992). This is also true of dancers. The intensity of training is often in the hands of others, as has been discussed earlier in this chapter, however when one considers the disordered eating patterns of both populations it may be time for individuals committed to dance to reflect on models of clinical and sub-clinical eating disorders.

A model mentioned by Smith (1908) and developed by Pugliese (1983) Sundgott-Borgon et al. (1987 & 1992) and now gaining credence in sports medicine (Beal et al. 1994) is 'anorexia athletica' (Appendix 5). This is considered a sub-clinical eating disorder

and in many ways validates my own experience in the dance industry, where in addition to sociocultural demands placed on women to be slim, there is a demand from the outside (directors, choreographers, rehearsal directors, teachers and critics) to present a particular appearance. This pressure can drive the ambitious individual to increase training intensity and caloric restriction. Are we looking at 'anorexia balletica'?

Another more criticised model is Lefevres' (1991) addictive disease hypothesis. Lefevre presents support from several research sources endorsing his hypothesis that anorexia nervosa is an addictive disease and certainly runs in families. He suggests that addiction goes with the person rather than the substance or process. He lists the eight characteristics of addiction (reproduced in appendix 7) and expresses the belief that anorexia, bulimia and compulsive overeating are three stages of the same genetic condition. Although not curable, it is manageable in much the same way as other addictions. This model for eating disorders may help those who avoid the issue by denial or blame which are two of the primary defences.

As far back as 1974 Fries proposed a 'continuum hypothesis' of eating/dieting behaviour which suggested that dieting may lead to disordered eating patterns (subclinical) which could then develop into anorexia nervosa (clinical).

There are several psychodynamic models for the clinical eating disorders, from genetic predisposition (nature) to environment and maturation (nurture) or a combination of both of these factors. The thing that is agreed upon is that these disorders are most often triggered in adolescents, although there is much disagreement about the specific triggers. Authors, clinicians or therapists usually take the line that triggered their own experience of the disease. A description of the diagnostic criteria for subclinical and clinical disorders is attached in appendix 5.

Summary

It becomes obvious, when comparing this survey of Australian pre-professional adolescents with the survey of Australian professional dancers, that there are common lifestyle factors and striking similarities in their overall health (or lack of it).

The challenges to the younger population in terms of risk management are almost a mirror image of the preceding generation of professional dancers. This covers the whole spectrum — from chronic injuries, anatomical sites of injuries and perception of breakdown factors to behaviour after injuries, perceptions of healing and yet further issues for female dancers.

Health and safety education at its present level in the industry does not appear to be getting through to the younger generation of dancers — or to their teachers and others in authority, such as course co-ordinators, rehearsal directors etc. Lip service to the principles of Safe Dance is not enough. They must be actively pursued throughout the dancers' daily schedule, not discarded under the inevitable pressures of aspiration and achievement.

Despite this gloomy picture, a huge step forward has just been made by leaders of the dance teaching profession in Australia, who in early 1997 have demonstrated their commitment to Safe Dance and to the development of national standards for their profession in the recently-published *Australian Guidelines for Dance Teachers*.

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After Safe Dance One

As the author of the *Safe Dance Project Report* (1990) I am delighted to write this article in witness of the fact that its influence is still being felt.

The importance of researching the health and safety needs of this country's professional dancers was identified by the Australian Association for Dance Education (now Ausdance) in 1989. On behalf of the Australian dance industry, Ausdance approached the National Arts Industry Training Council for financial support.

Ausdance and NAITC developed the following brief for the Safe Dance Project:

To make accessible to dance movement specialists the advances in scientific understanding of the body now being made in the realms of sports medicine, injury prevention, nutrition and exercise physiology.

The final report was published in March 1990 and validated by a cross section of the dance industry. In response to the report's recommendations several projects have been initiated.

During 1990 the Australia Council funded a tour of Australia in which I was able to offer seminars, classes and workshops in all major institutions teaching dance at both secondary and tertiary level. It was also a wonderful opportunity to work with the professional companies on my itinerary and repay their support for the project by disseminating information and exchanging ideas.

The Arthritis Foundation of Victoria has produced posters and pamphlets as well as supporting the Dance Week programs in Victoria, which are organised by Ausdance (Vic). As a direct result of this support I was invited to Melbourne by Ausdance (Vic) in both 1991 and 1993 to give classes, workshops and lectures in all of the major dance institutions as a way of disseminating information.

The Tasmanian Arts Industry Training Board and Ausdance (Tas) initiated development of a new curriculum for studio dance teachers. As a result, *Safety Issues for Studio Dance Teachers* has been written by Rosemary Bennett of the University of Tasmania in consultation with the Australian dance community. The curriculum and assessment criteria proposed in this publication are being implemented at Box Hill College of TAFE in Victoria.

In 1992 the Arts Council of New Zealand expressed interest in the *Safe Dance Project Report* by inviting me to the New Zealand National Dance Conference. This gave me an opportunity to work with and exchange information with both professional dancers and students of dance at many levels.

The Swedish theatre researcher Dr W. Ruth and his team read the *Safe Dance Project Report* at the Nordic conference and invited me to present a paper on the Australian experience. Their own research is now published in English (Ruth 1992). It contains a different approach and very interesting views on the type of dancer who gets injuries rather than which type of injuries dancer get.

At the Queensland University of Technology I initiated and developed, in liaison with the staff, a twenty-hour introductory program offered to the new intake of students in the first two weeks before the semester began. It is titled 'Survival Skills for the Dance Course' and is based on the information produced in the *Safe Dance Project Report*. This project was trialled and adapted over a period of five years.

In the Oct/Nov1993 issue of *Dance Australia* (No 68) an article entitled 'Safe Dance Practices' was published as part of a wider program to support and inform teachers of dance.

On the strength of the report and the discussion it aroused in Great Britain, Dance UK invited me to address their September 1993 conference as

keynote speaker. The topic was 'The changing role of the professional dance teacher'.

Debra Crookshanks (University of Sydney) has undertaken to repeat the original Safe Dance survey in order to evaluate and compare the results with those of the original, and in this way understand the effects of the information that has been disseminated during the last six years.

Last but not least, the present survey into the health and lifestyle of Australian adolescents in pre-professional dance training has now been carried out and published.

It is satisfying to me personally to know that the *Safe Dance Project Report* has not been relegated to the library shelf (although I was very proud to finally have something published and placed on library shelves both in Australia and abroad).

I hope that this present publication will reinforce Australia's dance practitioners at all levels with new information that is both interesting and stimulating, enabling them to continue their important work.

Danceplay: a gender issue for early childhood education in Australia 1994

(first published in *Proceedings of the 1994 Conference of Dance and the Child International: Kindle the Fire*. ed: Schiller, W. & Spurgeon, D. Pub. Macquarie University, Sydney, Australia 1994: 142–148)

Abstract

In the context of Early Childhood Education in Australia, where the majority of teachers are female, this paper reviews the male child's first experience of movement and its possible consequences.

The gender specific movement behaviour that may unconsciously continue a cultural and religious prejudice towards dance and movement studies in Australia is commented upon.

A brief look at some aspects of Western philosophic tradition with regard to the body-mind split and its effect on dance and movement are introduced.

The juxtaposition of the underlying assumptions with regard to movement exploration are investigated and compared with the motor development of the child.

Gender specific movement behaviour is reviewed and discussed briefly in the broader arena of anthropology. The areas of language and gesture are also brought into the discussion.

Some guidelines with regard to identification of a personal movement profile for the teacher of early childhood studies are offered in the belief that awareness could be the harbinger of change.

Introduction

In Early Childhood Education in Australia where the majority of teachers are female (in 1993 approximately 93% to 95% of the students of Early Childhood Studies are female, and this is becoming more evident in Primary school teachers' programs as well) the male child's first experience of danceplay will be presented by a female and be based on a female's genetic, maturational and environment movement experiences.

It is not my intention to criticise female teachers of Early Childhood Studies but to illuminate areas that need specific attention. It is also true that the mirror image or exact opposite of these difficulties presents itself to the uninformed male teacher in Early Childhood Studies.

If the gender-specific movement of the female teacher affects the male student in a culturally adverse way, then teachers must be aware of their own cultural and gender based movement profiles in order to avoid this conflict, or there is the potential danger that dance as a subject for serious consideration will be identified as an exclusively female pursuit. This viewpoint could be reinforced by the cultural politics of the dominant culture in Australia if one considers both the philosophic and religious bias against dance that has been evident here since educational systems excluding dance as an area of study were established.

As we in Australia move towards the acceptance of our multicultural society, it is time to consider:

- do female teachers of Early Childhood Studies present a limited range of movement experienced based on their cultural and gender specific movement profiles?
- are teachers and students of Early Childhood Studies encouraged to identify and explore their own non-verbal philosophical/cultural movement prejudices?

– if so what effects can predominantly female rhythms and movement patterns have on the growing boy? In some cultures it is considered a punishment, for example in the cultural context of the Bamana of Mali, a misbehaving boy is required to dance the rhythms associated with women of another caste as a strong chastisement (Brink 1982:422).

Although (Carroll& Lofthouse 1969:9) suggests that 'there is no difference between the movement experience that is valuable for boys and that which is valuable for girls', a restricted range of movement behaviours would certainly limit the experience of both boys and girls.

I am not suggesting that childhood development is a linear experience with cause and effect directly related in a sequential chain that is easily identifiable, such as 'boy has female danceplay teacher: boy adopts female patterns or rejects dance as a serious pursuit'. I do however lean towards 'The Butterfly Effect' as suggested by Lorenz in his Chaos Theory (Gleick 1989:22) that a relatively insignificant event can be responsible for an entirely different outcome. He called this 'sensitive dependence on initial conditions'. This theory, which focuses on how an apparently minor incident can change the outcome of a series of events beyond expectations, may revolutionise personality development and education as it is revolutionising 20th century scientific theory. I feel that this 'sensitive dependence on initial conditions' lies close to Erik H. Ericson's idea of the healthy child growing around obstacles towards the light.

A Western philosophic tradition with regard to dance/movement

The theoretical concept of body-mind split in our culture, as first propagated by the ancient Greeks and unintentionally but perhaps satirically demonstrated by business men wearing a neck tie (as Pirsig suggests, a noose to separate the head/thoughts from the body/feelings) or as demonstrated by academics speaking from behind a podium in order not to reveal their body language

and risk confusing what they may say with what they may be feeling, has firm roots in the thought processes and educational systems of the dominant culture in Australia.

This point of view, strongly expressed by Plato and latter embraced by the Christian church, has had considerable effect on dance practices and their acceptance in educational frameworks in the Australian context. It is only in recent years (1990) that dance curricula have been accepted in all States and Territories, whereas other art forms (music and art) not opposed by the Christian Church have been included and flourished since the inception of the education system in Australia.

Although there is an evolving awareness of the integration of body and mind in some disciplines, and a move towards the acceptance of holistic thinking, these cultural patterns need to be identified and re-evaluated

The 'movement as evil' school of thought

There is a suggestion that movement is pernicious, especially when associated with change. Plato displayed himself as an advocate of the immutable and expressed a deep-rooted suspicion of movement (Barish1981:18).

The Christian church and its emissaries have periodically banned dancing, the evil of which derives from the potential pleasure associated with moving one's body (Royce 1984:4). Curiously enough, some religious groups such as The United Society of Believers in Christ's Second Appearing (commonly called the Shakers because of their dramatic practice of vigorous dancing to crush sexual desire and dispel sin — Hanna 1988:72) by-passed this issue by separating the sexes and allowing them to move in circles within a circle, being careful to never touch. As this group practised celibacy, the need for some form of catharsis through movement may have also been cardinal to their mental health.

The 'movement as the essence of life' school of thought

There is material suggesting movement is the essence of life. For example in canto 34 of Dante's *Inferno*, he equates movement with purity, when he describes how the greatest sinners were condemned to immobility in the frozen darkness removed from love and warmth. He depicts moving, dancing and singing through eternity around God as paradise.

In this medieval notion of the 'Great Chain of Being', light, warmth and movement were associated with the higher order of things. The absence of these qualities characterised lesser beings.

There seem to be supporters for both the 'movement is the essence of life' school of thought and the notion of 'movement as evil'.

Some contemporary views of movement

With the advent of Sperry's 'Lateral Specialization of Cerebral Functions in the Surgical Hemispheres' (McGuigan F.J. Ed. 1973 *The Psychology of Thinking*) followed by empirical evidence of the neuroanatomical changes brought about by movement and the publication of *Frames of Mind* by Gardner (1985) and Ornstein's (1986) 'Multimind' suggesting the idea of multiple intelligences, the stage was set for an acceptance of dance as a learning methodology.

Dance/movement is a direct form of learning, stimulating parts of the brain that lie dormant without this experience. Ornstein & Sperry's split brain theory has inadvertently helped to promote dance education as a legitimate field of endeavour because of its unique ability to develop parts of the brain that would remain inactive if not stimulated by movement.

Robert Corrigan suggests that gesture precedes the spoken word, and that gesture is the true expression of what we feel, while words only

describe what we feel (1965:20). The inference of this train of thought for dance/movement teachers is that they are working directly with the authentic core of the individual.

Dance/movement as prejudice

From a behavioural point of view it is all too easy to misinterpret the thoughts of others according to our own particular movement preference. In fact it is impossible to accurately interpret the thoughts of others through their movement behaviour alone without confirming your opinion with the person involved.

If the teacher is unaware of her movement profile and preferences it may well be that another type of movement behaviour may seem out of order and even disruptive. For example, if the teacher prefers sustained, indirect and strong movement patterns, the child who is quick, direct and light may not have enough impulse control to wait for the end of a sequence before beginning. This can be misinterpreted by the teacher as a number of things, i.e. lack of respect or attention seeking behaviour. On the other hand the child who prefers sustained, indirect and light movement patterns may come into conflict with the teacher who has another type of profile and misinterprets the child's movement behaviour by making the assumption that the student is either passive or disinterested.

Dance/movement as communication

Regardless of your own personal bias, dance is controversial perhaps just because it can change your behaviour and make you aware of other choices.

For the teacher of danceplay it is important to understand the attitudes that each bias may support and the anxiety that change in movement behaviour can stimulate.

Structured movement is predictable and can create the illusion of stability, leaving one with the

sensation of knowing what is coming next both in oneself and others. The child or person that moves with co-ordination and grace will often be attributed these qualities and treated accordingly. There is an underlying assumption of control, which reduces the sensation of anxiety, in both the mover and the spectator.

Random movement however can have the opposite effect, leaving one with the feeling of unrest, anxiety and the assumption of instability. One can understand that this kinesthetic experience helps to form a bias towards the handicapped and the insane. This is also the cutting edge of creative movement when control is allowed to relax and excitement builds. Random movements contained in a structure can be a rewarding experience but in unskilled hands it can lead to confusion and fear of loss of control.

The motor development of the child goes from random uncontrolled movements to increasingly co-ordinated and controlled sequences. At the random movement stage a successful symbiotic relationship with the primary parenting figure protects the infant from some anxiety. There may be a mechanism that regulates speed of development of the psychic birth of the infant (the first three years of life, which is the separation/individuation period described by Margaret Mahler) to gross motor control, thereby protecting the individual from unnecessary anxiety.

This mode of movement learning remains with us. Think of the last time you learnt a new movement sequence or dance, regardless of whether it was work movements or codified dance steps. There was a progression from random to co-ordinated movement with a subsequent reduction in anxiety that accompanies the process.

There are cultural preferences in styles that are reflected when speaking a language, and gender specific movement behaviours that are culturally determined. The socialisation process is almost entirely movement oriented, perhaps because movement is the first mode of human interaction.

There is a curious example of socialisation through movement practised by the Isthmus Zapotec Society in the southern Mexican city of Juchitan, where there are males (known as Muxa) who are chosen, sometimes at the age of six months, to be brought up in their culture as female. They are brought up as female by females, play with female children and eventually go into specific traditional trades where they are trained by another Muxa. Their reference group is female (Royce 1993:9).

We live in a society dedicated to the proposition that language, and more particularly the written word, can encapsulate all knowledge (Mead 1979:282). In the case of the socialisation of the Muxa and other kinesthetic experiences reinforced by 'Split Brain Theory' and Gardner's 'Bodily and Spatial Intelligences', this information may well be inaccurate.

Our cultural identities are predominantly non-verbal. It can be an adventure to learn other languages, and the fascinating challenge is to be able to change the way we move to accommodate the new language. It may well change us and other people's interpretation of who we are.

With all of this information at their disposal it is important for individuals who will be teachers of danceplay in early childhood education to be aware of their specific cultural and gender identity before attempting to identify their movement profile. Sullivan's 'selective inattention' suggests that what we do *not* do or say will tell us more about ourselves than what we do and say. In movement terms that implies that the movement qualities that we avoid may disclose attitudes and prejudices unspoken but clearly illustrated in a non-verbal sense. If we accept this assumption it is clear that identifying your movement profile becomes important not only for your teaching skills but also for your own personal development.

Identifying your movement profile

The first step is to identify your own movement profile or preference, and be aware that it is both

culture and gender specific. This awareness, once achieved, will enable you to increase your range of movement behaviour, thereby enlarging your ability to identify and empathise with a wider range of movement behaviours found in the individuals in your care.

A valuable asset would be the acquisition of a qualitative movement language such as:

Effort/Shape Analysis (Rudolf Laban);

Kinetic Sensory Studies (Helen Cameron/Diana Kendall); or

Movement Behaviour Analysis (Dr V. Hunt).

The model that I use in this example is based on Laban's Effort/shape theory.

One avenue of approach in a search to identify your personal movement profile would be to begin with body awareness followed by identification of different body parts. Then develop an awareness of muscle tension and a perception of the changes occurring. This will enable you to react with appropriate movements to what you see, hear and feel.

The next step would be experimentation with effort, time, weight, space and flow. The thought of dividing them into indulging or fighting efforts may help. My experience teaching females in Australia is that the majority have demonstrated a preference for the indulging efforts and an avoidance of the fighting efforts. Many have expressed a feeling that it is considered inappropriate or unbecoming for a female teacher to use fighting efforts.

However it is important to keep in mind that this is only a working model and everything is not cut and dried.

Having taken yourself through this process without the use of modeling (imitation), it is time to move on.

This can be accomplished with the use of appropriate games. Take the games with which you are familiar, give some thought to the movement preferences these games demonstrate and play with changing the effort, time, weight, space and flow elements. Next it is imperative to look at the games you avoid.

Alternate gross motor and fine motor skills to feel where your preference lies and how you feel when you choose your non-preferred skill.

From here it is just a hop, step and a jump to identifying your profile. Just by moving quickly or slowly in a room with others involves decision-making (you will quickly identify whether you prefer to lead or follow), problem solving, body and space awareness, impulse control and the ability to work with others.

By now you will have recognised your movement preferences and, perhaps more importantly, you will have the knowledge to identify the type of movement that you have unconsciously avoided in the past. With this knowledge as part of your body text, your movement experiences can be unlimited. This openness gives students with whom you are interacting the possibility to experience their own movement preferences with regard to their gender or cultural background without interference.

The introduction of visual imagery may be your next move. In place of strong, sustained, bound and indirect movement at the middle level in general space you can choose an animal that fits this movement description. Then you may realise that in the past you always asked others to move as particular animals or birds. Now you can vary the diet to include the skills which may not come naturally to you and in this way build up a relationship to individuals who are in command of the opposite profile.

Next the introduction of mood with the use of the same model may be appropriate.

At this stage you may feel comfortable to express and communicate, experience, contain, convey or work through anxiety in movements that do not resemble your profile.

Despite the title of this paper and my original intentions to focus on the issue of gender, I now realize that in all of the discussions it is being constantly submerged in the more general parameters of dance/movement teaching. What emerges is the necessity to know yourself with as much honesty and openness as is possible at this stage of your development and keep a dynamic focus in your life that will enable new learning to enrich you, so that you may be of value to all of your students. This constant willingness to consider change creates its own level of anxiety but the rewards in terms of mental stimulation and personal development bring their own satisfaction.

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The Difference Between Training and Taming The Dancer, 1994

This paper was the keynote address at Dance UK's 1993 conference entitled 'Training Tomorrow's Professional Dancers' and published as *Tomorrow's Dancers* by The Laban Centre for Movement and Dance, Laurie Grove, London, 1994: 8–19

Abstract

This paper will introduce some reasons for changing the role of the dance teacher, then explore the need to shed some light on methodologies, behaviour, characteristics and styles utilised by people who teach dance.

Metaphoric perspectives in teaching and patterns of organisation in structure of self are looked at and compared in relation to dance teaching.

The often unspoken fears of anxiety, loss of control and resulting chaos are explored and some guidelines are proffered.

The question of student autonomy, who wants it and who is able to handle it is raised.

The idea of encouraging and supporting student autonomy in the studio with its possible consequences to both student and teacher is presented.

There is an outline suggesting ways to bring about these changes in the role of the dance teacher and who could be effective in these sensitive areas.

Introduction

It is a privilege to be here with so many people contemplating change. I have chosen to address a particular issue which appeared in *The Dancer's Charter for Health and Welfare* concerning the changing role of the dance teacher.

My research focus has been on Safe Dance practices and injury prevention and management in Australia. Now that we know more about the type of injuries that dancers sustain I begin to relate more and more to the idea that I should be looking for the type of dancer who sustains an injury. This was certainly strengthened by my meeting with Swedish theatre researchers last June, particularly Eva Ramel, whose 1992 survey identified a number of injuries associated with personality types, self esteem and body image.

In some ways, I feel as if the dance research that has been done recently completes a circle.

In the 18th century, the English dance master, John Weaver, praised dancing as a way to health but did warn of excessive indulgence. Have we now reached a point of 'excessive indulgence' and has dance training become a potential health risk? If this is the case then we must look at new ways to train persons who dance so that they are able to accept part of the responsibility for their own development and welfare.

Once they present themselves to the competent teacher, the responsibility for what is being taught and the way in which the required technique is conveyed rests with the teacher. How it is learned rests with the student.

The physiological response by the student is comparatively easy to evaluate, but the psychological effect may just be a trigger on other character structures and therefore impossible to evaluate.

The development in the standard of dance technique speaks for the competency and

dedication of dance teachers. I had hoped that this paper would highlight issues that have lain dormant. I have explored areas less often discussed — but perhaps equally well known at a sub-conscious level — for example, how dance is taught and what effects it has on the whole person.

This paper is my response to *A Dancer's Charter for Health and Welfare* (Dance UK 1992, p. 4). *Teachers should: seek to develop thinking dancers able to respond intelligently to all aspects of their training, including new ideas, rather than dancers who 'react as puppets' with good technique.*

For me as a dance teacher and educator, this is a particularly exciting and challenging statement.

The dancers are asking us to 'consciously' support and encourage personality development, self esteem and self image as well as teach technique! I say 'consciously' because I feel that there have always been exceptional teachers who have encouraged the development of the whole person without having consciously formulated a theoretical framework.

We are being asked to contribute to the fully functioning person. In reference to the development of personality Carl Jung said, 'At first we do not know what deeds or misdeeds, what destiny, what good or evil we contain, and only the autumn can show what the spring has engendered, only in the evening will it be seen what the morning began'.

I think that this applies equally to us as teachers. It is only in retrospect that we can evaluate the psychological effect of our instruction and even then it is not always possible. After all we are a part of the whole of a dancer's life.

The character structure of the individual is formed by a combination of genetic endowment, environment and maturational influences. Whilst consciously selecting a dance teacher, the student may unconsciously choose the teacher who will fulfil his/her emotional needs. For example if the

need is for structure and an authoritarian approach the student will find an established teacher with a reputation for the appropriate attitudes and manner. ('Teaching by terror' is a tried and effective method where the student is viewed as a product and the goal is technique. The effects of the process on the student's psyche is rarely discussed.)

The ideals of dance are unattainable but that has never really discouraged dancers or dance teachers. I think it is important to remember that we are dealing with ideals as sign posts and not goals. The student should be made aware of this. The dancer's self image and mental health may depend on it.

While researching my paper 'The Role of the Dance Teacher' for *Dance Action National* in 1990 I came across a book by Judith Grey titled *Dance Instruction*. It was a revelation to me in terms of research into the role and behaviour of the dance teacher. Many thoughts on the topic that I had felt were innovative were clearly formulated and articulated in this book. It was both exciting and depressing. Exciting to realize that another thinker was on the same track but depressing to realize that I was not innovative (although I must admit it is not the first time this has happened to me).

After reading the book, I felt that the next step should be a discussion on the dance teachers reaction to suggested development and possible change in teaching methodology, behaviour and style. This could be followed by an investigation into different methods of student learning and how they might affect self image, self esteem and mental health.

The Changing Role of the Dance Teacher

The dancers who wrote 'A Dancer's Charter for Health and Welfare' are asking us to expand the role of the dance teacher

In the past most of the concentration has been on what we teach and we have become very

competent at that (in fact there are many academies and societies set up to take care of just that). One of the least explored areas is how we teach dance and what kind of people are drawn to the teaching of dance. Once we have dealt with this it may eventually influence *what* we teach.

One of the ironies of teaching is the theory suggested in recent research in the field of psychology, suggesting that the way in which 'sensory evidence, if it runs contrary to the pattern of organization of the self, tends to be distorted in awareness. In other words we cannot see all what our senses report, but only the things that fit in with picture we have'.

This suggests that students come to us with their own 'patterns of organisation', so we may have to vary our teaching styles to accommodate different personality structures or restrict ourselves to teaching students with a pattern of organisation similar to our own.

In the past the role of the dance teacher was defined by tradition. The time has come to expand on tradition using relevant research, heritage and informed, analysed dance teaching practice.

Identifying Patterns of Organisation in Teachers and Dancers

As we are considering the changing role of the dance teacher it would seem appropriate at this point to identify some of the patterns of organisation already in use by dance teachers. These often appear in the form of metaphors easily recognised by the dance teacher.

Carol Lynne Moore (1985) believes that the body image, shared consciously or unconsciously by the student and teacher, significantly influences all aspects of movement education as it occurs in the studio, gym or playground.

This could well tie in with the patterns of organisation theory, even as far as sharing metaphoric perspectives such as the body as

instrument, the body as beast, the body as machine, the body as *objet d'art* or the body as child.

In all of these metaphors I am speaking of dance training in the broadest sense.

Referring to the body as an instrument is common practice within some genres of dance. It dehumanises the whole person to a thing to be designed, tempered, refined and sharpened to perform particular skills. It suggests an unfeeling, precious thing to be handled with care and used only for a specific purpose. This concept reinforces the body-mind split so prevalent in the Judean/Christian culture.

When the body is viewed as beast, then it seems only natural that it needs an animal trainer to tame it — someone to work it hard and treat it roughly, a no-nonsense approach. This 'do it again until I say it is right' mentality can lead to endless repetition that may well reinforce bad habits. Of course there is a fine line dividing useful repetition and perseverance to the point of fatigue. The other potential danger inherent in this view is that the student learns to mistrust the kinesthetic feedback of his/her own body.

The body as machine view of training, offers a plan to program the machine, give it sufficient fuel and service it with proper instructions. No sentiment here, just push the right buttons and the stimulus becomes automatic. The forgotten element here is the human psyche and the sometimes hidden effects of this type of training on the personality.

Most cultures practise some form of aesthetic distortion. This view of training considers the body as an *objet d'art*. There are ideals set as goals to achieve. The guidance is done by an authority on this particular aesthetic. For example if one can have beautiful feet, it stands to reason that the opposite is having ugly feet. If there are good proportions then there must be bad proportions, indicating a moral judgement of the body. The very use of the term 'object' defines the relationship

between the artifact to be produced and the producer. The body-mind split may be reinforced in the process and the individual's self image distorted.

The body as child is a holistic approach. The lost innocence of childhood is to be rediscovered by allowing the student to be respectfully aware of him/herself. It is usually based on exploration and the search for a return to 'authentic' movements, to be rediscovered in the process of dance training. This is a wonderful tool for body awareness and the creative process. It can also lead to useful insights in personal development and be guided towards specific technical goals.

Each body metaphor has both favourable and unfavourable implications for dance instruction. Serious dance teachers must not only look deeply into themselves to see what metaphors they tacitly employ but must also question what lies in students' minds, as teacher expectations are reflected in students' attitudes and efforts.

All of these patterns of organisation or metaphoric perspectives can be taught in different styles and may lend themselves more easily to a specific technique.

One of the issues of this paper is how dance is being taught (teaching practice, methodology). It is terminology which has created some confusion in parts of the dance community, where 'method' has come to mean the actual teaching of dance technique and the way it is assembled and passed on to the student. Educationalists consider this content.

The question of teaching styles as opposed to teaching dance styles has seldom been discussed in the dance community to my knowledge. I am referring here to the three broad categories of teaching styles i.e. authoritarian, personable, and casual (taking into account that their boundaries can overlap). The majority of dance teachers follow the style of their 'guru' or organisation and attempt to accommodate their own personalities to these

needs. This applied to many other forms of teaching until the advent of the teaching sciences.

Traditionally dance technique teaching has been done by people who were themselves dancers. The most common way of disseminating their knowledge was by demonstration and role modeling.

By 1980, in an Australian book entitled *Towards Better Coaching* the author expressed the notion that 'Many coaches, and the club committees who hire them, still consider that the only qualification needed to be able to coach is success in a sport and concomitantly a knowledge of the game'.

This attitude continues to manifest itself in our field. Evidence of the teacher's personality, ability (as a dancer) and other traits is required in job applications. Evidence of such elements as teaching styles (authoritarian, personable, and casual), characteristics (knowledge, organisation and honesty) and behaviour (verbal/ non-verbal) or teaching practice (methodology) is rarely submitted or considered important.

In consideration of the dance students and dancers who endure a distorted body image, low self esteem and sustain a high rate of injury, (Bowling 1989, Geeves 1990, Ramel 1991) it is time to examine the situation.

Do we teach the acquisition of skills in the most beneficial way?

Can we learn to vary the ways in which we teach?

Do we use different teaching methods to facilitate the learning of such diverse skills as ballet technique and creative dance?

Are we conscious of the difference between these methods?

Are we training our students to understand and develop their own technique or are we taming them, so that they are conditioned to respond to a

recognised stimulus? The individual student should be encouraged to be aware of his/her level of tolerance and never work through pain, fatigue or injury. No matter how empathetic or gifted, the teacher is unable to experience pain or emotion for a student.

The time has come to develop a list of dance teacher actions that in turn would provide a basis for detailed dance teacher behaviour analysis.

Dance teaching can be approached analytically, intuitively, or with a combination of the two. If one is gifted with one of these approaches, some insight into the other would create a more balanced perspective.

The Dance Teacher

The concentration on what we teach may have led us into behaviours that can be identified when we begin to focus on how we teach dance.

Many children/students are taught 'learned helplessness' to assuage the fear of chaos in their care givers. The power of being the all-knowing is remarkably seductive.

An examples of 'learned helplessness' would be when the dance teacher takes the entire responsibility for learning the syllabus, (which is only vocabulary), and offers it piece-meal to the students, rather than requiring appropriately aged students to learn it to the best of their ability from the manual and then coaching them in the refinements of the technique once they know the vocabulary.

One of the most recent examples of 'learned helplessness' that I have seen happened during the reconstruction of a dance piece at a tertiary institution for dance studies. The dancers had been instructed to learn the piece from a video recording to prepare themselves for the rehearsal. An artist in residence who had offered to help with the rehearsals was asked by the students to translate from the video. He completely took over the role of translator of the video, looking at the video in front

of the students and then turning around to them and telling them which leg to stand on. I felt that this was a classic example of not allowing people to stand on their own feet!

The fear of chaos generated by the unknown is often a powerful deterrent to the loosening of the reins. After all, the dance teacher is no different from other care givers. The emotionally secure care giver is not so threatened or frightened by the unknown. To use Frenkel-Brunswik's phrase, they can tolerate the unknown.

The reins are often to be identified in the form of a syllabus or repertoire. A syllabus can be invaluable, offering guidelines and a useful support to the competent dance teacher. It can also be a weapon in the hands of the inexperienced, insecure or compulsive personality. The same could be said of a video library or notation archives.

The what of the syllabus or system, be it Vaganova or Graham is clearly laid out and can be a trap for the fearful or compulsive type of personality. This type of personality is not uncommon in the dance community. Many of us may recognise from personal experience the compulsive ritual element that dance training encourages and reinforces. So the survival of individuals with this particular character structure is not really surprising. Unfortunately this element of compulsion in dance teachers suggests neurosis and although they may function adequately on a day-to-day basis their impact on a student could be profound.

Money-Kyrle, an English psychoanalyst, has indicated that he believes it possible to call a neurotic person not only relatively but absolutely inefficient, because he does not perceive the real world as accurately or as efficiently as does the healthy person. The neurotic is not only emotionally sick but cognitively wrong.

Student autonomy in the dance class (the unknown) can you handle it?

Having been bold enough to foster student autonomy in the dance class, do you become uncomfortable, worried, ambivalent or fearful? What are your worst fears? Loss of control resulting in chaos, loss of respect, loss of power? or some secret personal fear never spoken or, worst of all, a fear unknown even to you!!

Once you start to experiment you will begin to identify your own parameters, understand how much you can experiment at any given time and what your present limits are.

When you revert to the comfort zone of old habits and teaching formulas, unsupported by independent thought or research, you will know that insecurity/anxiety/fear have struck. New learning is in the next breath if you just dare to relax your knees and take it. Or are you more comfortable with students who are over domesticated, caged and tamed? It is a question only the individual can answer, but it must be asked by the ethical dance teacher.

Student Autonomy

In order to achieve this the dance teacher may need the support of a conceptual framework for his/her own reference.

Paulo Freire describes traditional teaching as 'banking': the teacher's role is to 'fill the students by making deposits of information which the teacher considers to constitute true knowledge'. The student's job is to 'store the deposits'. This is often what happens with the transmission of dance vocabulary.

In practice this corresponds to Flander's (1960) 'direct teacher behaviours which were those considered to restrict student's freedom of action by dictating a line of action, such as imposing a line of procedures, imposing a standard of performance,

asking questions for precise answers, providing information, providing personal solutions or opinions'.

One of the more common methods used to inhibit autonomy in the dance class is to set a task, e.g. focus on the inner thigh in pliés, and then make other corrections, such as 'careful of the hands', 'lift the eyes' etc. during the same exercise before the first task is completed. Remember, one task at a time. There are also non-teaching behaviours, e.g. sarcasm, put-down, ill temper or irony at the expense of the student — to name just a few. For a teacher, learning to control one's own enthusiasm and social conditioning is a difficult assignment.

Belenky and others have created an opposing metaphor in 'the teacher as mid-wife'. While the banker deposits knowledge in the learner's body, the mid-wife draws it out. These support the students in problem finding and problem solving, and do not think *for* them or expect them to think as they do. In this way the student can be encouraged to be autonomous.

According to Flander's (1960) 'Indirect teacher behaviours were those considered to expand the student's freedom of action by encouraging his/her participation and initiative'. They correspond to such behaviours as helping the student to determine a plan or a procedure, helping the student to determine a standard of performance, helping the student to theorise, and helping the student toward self expression.

With these prototypes in mind and a conceptual framework as a support, the next step would be to inform the student of your intentions to vary your teaching methodologies.

To alleviate anxiety it is important to consciously prepare the students for autonomy and to keep them informed of the process. Explaining just what is about to happen and giving them the assurance that the support and information that they need will always be available from the teacher until such time

as they feel confident to accept responsibility for their own learning.

Trust in one's own organism is a prerequisite for the health of self, according to Carl Rodgers.

We can encourage autonomy in the students by teaching them to problem find and problem solve during training in the studio, and then slowly abdicate our role as 'guru' so that the students may develop trust in their own organisms. At the same time it may be necessary to reassure the less secure students and provide a safe haven of knowledge and comfort to which they can return when they feel they have reached their tolerance level for anxiety.

What we need to encourage is 'information processing', a quantitative model of learning behaviour rather than a conditioned reflex approach to learning the dance vocabulary.

Some students will take to this development enthusiastically. However, not all will appreciate your efforts to return their autonomy. Some will feel un-cared for and lost without the one truth from the master. I remember asking a student, 'Which way did you fall after the last pirouette exercise?' As I received no response I employed 'wait time', still no answer, so I insisted, only to be told, 'But you are the teacher. You are supposed to know'. Then there will be the indignant ones who know the 'what' (dance vocabulary) and feel you are wasting their time. Others will feel threatened and rebellious depending on their character structure, its pattern of organisation and your teaching style.

The students' 'pattern of organisation' also constitutes their 'comfort zone' and any attempt to move out of this zone can create anxiety brought on by fear of change. It reminds me of all the cowboy movies where the hero says, 'I would rather die than change'. Perhaps many dance careers have died just because of this syndrome.

The good news is that beyond the anxiety threshold is where the new learning begins. This applies to both teachers and students.

The teaching/learning methodology of problem finding and problem solving as student exposition is in my opinion, one of the most important triggers to student autonomy. Student-to-student tactile correction and guidance can also be a positive step in the same direction.

We must remember that the best technique we know, even though not the only one, for getting people to the point of independence, is giving them respect and genuine affection.

How will we know when we have been successful in giving the student autonomy?

The student increasingly comes to feel that the locus of evaluation lies within themselves. They will need the teacher's attention and approbation less and less. The only remaining question for them is, am I dancing in a way that is deeply satisfying to me, and which truly expresses me?

It is important to remember that we are speaking about choice. Not all director/choreographers will employ the autonomous dancer, some will demand a return to the tamed dancer. This will depend on the nature of the work and the maturity of the director/choreographer. But the trained dancer will be able to move between these two modes of behaviour without stress.

The dance teacher can act as a market researcher, knowing what the different people who are directors/choreographers expect or what their level of tolerance for the unknown is.

Discussion and Recommendations

If we continue to tame our students instead of training them, we become both the hunter and the hunted, giving up our independence to keep others dependent. We are staring co-dependency in the

face. What could be more stifling for the expression of the dance artist and the art form?

To quote Lewis Carroll: ' "The time has come", the walrus said,' — to take a close look at who we are and why we teach. Then we may be able to understand how we teach, identifying our teaching behaviours, styles and methodologies and recognising the need for the type of change today's dancers are demanding.

The time has come to develop a list of dance teacher actions that in turn would provide a basis for detailed analysis of dance-teacher behaviours, styles, characteristics and methodologies. This will hopefully bring about some changes where necessary, supporting suitably tried and true traditional approaches and combining them with information and new knowledge from dance-science research and other areas.

The anxiety that these changes may bring into our lives could develop in us a tolerance for all manner of things. Viewing anxiety as a harbinger of new learning rather than an impassable barrier will alter its effect on us. The studio experience is a slice of life, not an experience in isolation from it. We may begin to experience the joy of positive stress as a reaction to and protection from our changing professional environment.

All of this will allow new learning to take place which in its turn will stimulate student autonomy and development along lines more in step with the times in which we live.

Recommendation 1

The introduction of pedagogy (the how of teaching/ practice) into the curriculum of the institutions that train dance teachers would facilitate the required change in perspective. By encouraging the use of syllabi as a framework for the creative teacher rather than a fundamentalist tome to be strictly adhered to, organisations and societies responsible for dance teacher inservice and content of syllabi could support the move towards the more informed teacher.

These two groups would then function as pro-active advocates for 'developing thinking dancers able to respond intelligently to all aspects of their training, including new ideas' as suggested by the Dance UK charter.

Recommendation 2

Dance-teacher training could have a 'best use by' date, after which an update would be required. Respected, experienced dance teachers, although not expected to take a teaching practice course, could take the updates on teaching practice (pedagogy) to support their empirical knowledge.

The question is of course who would regulate the registration of such an education? I hope that the answer lies with us in the dance community and not with government authorities.

I am fully aware of the depth and breadth of the changes I am suggesting, and the chaos that we fear when faced with dramatic change. Moving out of our comfort zone is often brought about by disasters which can bring out the best in people. In this case the disaster could be government legislation of dance teaching recommended and organised by unsympathetic bureaucrats! Must we wait so long?

Summary

The relationship between dance teacher behaviour and the behaviour of the dance student may well be an element to be correlated with the dancer's self esteem, body image and the present injury rate. In my opinion it is a hypothesis worth consideration.

Only after we are fully aware of how we ourselves are teaching dance will we be able to know the most beneficial way to guide each student in our care and the most effective way to communicate both technique and the skills required for the development of the fully functioning artist.

The rewards this process offers the dance teacher are personal development and the satisfaction of knowing that one is also closer to being a fully functioning person.

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The Psychological Recovery Cycle from Dance Injuries

(first published by Ausdance (Queensland) in *Dance Life* 8 (1) 1993)

The name of this paper was deliberately chosen and meant to attract people in the dance community that are ready to move out of their personal comfort zone or at the very least are considering other options for their personal process.

As Dostoevsky put it: 'Taking a new step, uttering a new word, is what people fear most'.

If we don't change, we don't grow. If we don't grow we are not really living. Growth demands a temporary surrender of security. It may mean a giving up of familiar but limiting patterns, (for example in the dancers case it may mean looking at the way you are training, re-evaluating your lifestyle or how you rehabilitate from an injury) safe but unrewarding work, values no longer believed in, relationships that have lost their meaning (Gail Sheehy, 1976).

According to Eric Erikson (1959), every trauma in life can be turned into a growth experience. Injury for a dancer is certainly a trauma, often of shattering proportions, particularly if the individual has no so called 'lifebalance' (e.g. other interests or hobbies to relieve the psychic pressure of a one track existence).

One useful strategy is to make your dance injury 'a growth experience'. For the injured dancer it should be an active rather than a passive process.

Rehabilitation should not simply mean a return to the state before illness or injury but the development of the best possible physical and functional condition of that individual (Ryan & Stephens 1988). I would assume that 'functional

condition' includes psychological adjustment in the broadest possible sense.

Since my return to Australia at the invitation of Ausdance in 1989, I have been involved in research into the site, type and frequency of injuries sustained by Australian professional dancers as well as their prevention and management. However, my recent contact with researchers in other countries, particularly Sweden, has suggested that there may also be other paths to follow.

In Sweden, dances and other artists work under conditions that we can only dream about. One of the assumptions being investigated here in Australia is that if working conditions, such as appropriate floors, less working hours, more money, job security, state pensions, resident physicians and physiotherapist were better, we would have fewer injuries. However a survey conducted by Eva Ramel (1991), questioning the dancers in the three largest theatres in Sweden that have permanent dance companies, demonstrated that the site, type and frequency of the dancers' injuries were remarkably similar to our own. An interesting aspect that emerged from the research was that dancers who felt they had little or no control of their lives (external locus of control rather than internal) suffered particular types of injuries, e.g. neck. This suggests that we could be investigating personality types as well as working conditions.

Some relevant research in the USA is Hamilton, Hamilton, Meltzer, Marshall and Molnars' (1989) 'Personality, Stress, and Injuries in Professional Ballet Dancers' which suggests that physical stress and some personality traits characteristic of the 'overachiever' distinguished injured dancers.

Here in Australia, Virginia Gallagher's (1991) *Performance Preparation and Enhancement. What Professionals Dancers Do* has interesting insights into the time frame for mood adjustments, comparing younger and older dancers. This may

indicate another parameter for identifying injury potential.

A recent unpublished study by Graeme Collins (1992), titled 'An Investigation into the Impact of Social and Psychological Adjustments in Adolescent Female Dancers' may, in time lead us to the age at which some personality types are susceptible to injury.

All this suggests that the questions that are most relevant at this moment in time are: 1. Which personality types sustain injury? 2. What type of injuries do dancers sustain most frequently?

Dancers' Response to Injury

In 1990 I chaired a session on 'The Psychology of Injuries' at A.C.H.P.E.R.'s International Conference in Perth. One of the interesting aspects that emerged were the similarities between Elizabeth Kubler-Ross's (1979), behavioural and emotional stages of grief responses, i.e. denial, anger, bargaining, depression and acceptance and the athlete's response to injury. Although 'bargaining and denial' were observed more frequently than 'anger and depression' all stages were rated 'greater than moderately indicative'.

I found this particularly fascinating as I had written an article about my own response to retiring, which I called 'The Metamorphosis of a Dancer' (Geeves, T. 1990). In this I identified similar stages, but extended the personal process to include reframing and adapting.

Despite the indications drawn from Druss & Silverman (1979) that 'dancers were missing the athletes' motivations of excitement in competition and release of aggression through activity; rather ritualistic practice took up the dancers' time'. I think it is reasonable to assume that dancers may have a similar behavioural and emotional responses to injury. This information can help the dancer to choose an appropriate activity when convalescing from an injury, i.e. ritualistic.

In Gurleys' (1984) comparison of dance and sport it was revealed that after a 90-minute dance class there was decreased anxiety and depression in the dancers. Although sport was also helpful in decreasing anxiety and depression, dance was marginally better. It follows that without dance classes the anxiety and depression levels would have to be dealt with.

I would like to reiterate that, having sustained an injury, the dancer's strategy is to make it 'a growth experience' (remembering that this should be an active rather than a passive process).

For the dancer, the physical ritual of working life can be converted to rehabilitation, and may even seem like second nature, but it is important to be aware of and recognise the behavioural and emotional stages of the grief response. This may require more focus.

Keep in mind that DENIAL can be the 'Achilles heel' of the dancer. His or her reluctance to admit injury or the severity of an injury, and the need for a review of training practice and lifestyle, could create a situation where a minor injury could escalate into a major disaster.

The expression of ANGER (why me?) is not encouraged in people training to be dancers. In fact many teachers tame rather than train their students, control being the issue often brought about by the fear of chaos on the part of the teacher. Expressing anger in an appropriate way may be helpful for recovery.

No matter who or what you BARGAIN with, the injury will not disappear!

DEPRESSION can be brought on by the feeling of loss of identity. After all, dance is the focus of the dancers' life. So grief and mourning are appropriate at this stage. It is important not to isolate yourself, or resort to drink or drugs, but to ACCEPT grief as a normal stage of the process of injury.

Once you have accepted the injury and the overall effect it is having on your life, it is time to think about REFRAMING (looking at other ways to do things). This means change, which demands a temporary surrender of security. This can be difficult enough in ordinary circumstances. However, during recovery from injury it may require enormous emotional effort.

Having discovered new ways to approach your world you may need goals and objectives to help you ADAPT your life style. Your goal during this stage is the development of the best possible physical and functional condition. This may mean, for example, strengthening the muscle imbalance that contributed to the injury and looking at the underlying background for the imbalance. Is it in fact technical, physical or psychophysical? Will you need short term physiotherapy, some form of behavioural or cognitive reframing and eventually some long term therapeutic support to work out the underlying factors for your present disability?

The end result could well be that after the injury you are a more fully functioning person and dancer. In this case the original injury may now be understood as the answer to a problem which is now resolved, rather than a problem in itself.

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Safe Dance Practices

(first published in Dance Australia No 68
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Introduction

Safe Dance practices are dance practices taught and performed with care and effective safeguards against potential injury. This lesson examines awareness, maintenance and development of the body through fitness techniques, as well as looking at injury prevention and the long-term effects of exercise.

The main way of avoiding injury is not to sidestep particular movements, but to ensure that the body is sufficiently prepared to survive the particular technique or techniques practised. The individual dance student must strive for overall fitness — in fact a lifestyle that matches the dancer's ambition — requiring commitment both in the studio and outside, otherwise a lifetime of dance enjoyment will remain just a dream.

Overall Fitness

The essential components of fitness are a balanced diet, adequate rest, graduated muscular exercise, minimal physical and psychological stress and the absence of toxic substances, namely drugs, and invasive infections.

Physical fitness relates to flexibility (static and dynamic), strength, power, muscular endurance, neuro-muscular co-ordination (balance, agility, kinesthetic awareness), cardiovascular endurance, body composition, and body type.

Before enlarging on these topics there are some general principles to consider.

Alignment

Once the dancer begins a program of conditioning, which adds to the work load of technique classes, rehearsals, and performances, appropriate alignment is probably the most important element which can assure survival. Muscles should work minimally if the body is aligned. A North American, Dr A. Taylor, wrote in 1874 'structure governs function'. That remains the same today.

Unfortunately, alignment can deteriorate under the stress of an increased work load so it is far better to cut back a little before fatigue sets in rather than risk potential injury.

Impaired postural balance affects the kinaesthetic sense, the ability to perceive what is happening. There is a subsequent reduction in the skilful performance of certain movements. Although many experienced teachers have an eye for alignment it may be reassuring to know that there are a number of techniques used to screen posture alignment such as the grid, the plumb line, the pedograph and the podioscope. For those dancers interested in assuming the responsibility for their own balanced wellbeing, a description of these techniques can be found in *Dance Injuries* (Arnheim:1991).

Warm-up/ Cool down

A warm-up is anything that prepares the body for increased exertion.

Without it you run the risk of injury. As the muscles become warmer they also become more pliable. The best muscle warmer is your own circulation, so the trick is to increase your blood flow by slowly exercising. In addition to tuning your body this also cuts down on muscle soreness when the session is completed.

There are many aspects of warm-up. The one most familiar to dancers is light flexibility (usually sitting on the floor chatting) the most neglected aspect is cardiovascular warm-up.

A cardiovascular warm-up involves at least 15 minutes continual movement, e.g. jogging and gentle stretching of large muscle groups. Always warm up appropriately before class, rehearsal or performance.

The higher the environmental temperature and the greater the amount of clothing, the sooner the desired body temperature of about 38.5° C is attained (muscle temperature 39° C or higher). Ideally the rest period between the warm-up and the start of the activity should be no more than a few minutes, in any case no more than 15 minutes. After 45 minutes rest, the beneficial effects of the warm-up are abolished, at which time the muscle temperature has returned to pre warm-up levels.

This point cannot be reiterated too often. The dancer must warm up before each class and stretch all major muscle groups (not beyond the pleasure/pain barrier) before executing any fast, full range of movement techniques (such as swings facing the barre).

A five minute cool-down is recommended after completion of the class, rehearsal or performance (utilise movements from the technique you have been practising) then stretch. This will assist in the removal of lactic acid and restore the body.

Graduated Training Load

The tenet of 'start slowly and progress gradually' with each new dance class is the responsibility of both the teacher and the dancer. The purpose is to increase stamina, strength and flexibility.

No matter how empathetic or talented the teacher, choreographer or medical adviser is, they are unable to experience pain or emotion for a dancer. Pain does not indicate progress, but is a sign that you have gone too far. Working through pain, fatigue, illness or injury may lead to eventual loss of career prospects and impair the quality of your life. Simply avoid doing too much too soon.

Australian research (Geeves 1990) shows that many injuries are sustained by professional dancers about three weeks after a holiday or break from training, so listen to the signals that your body is sending, when you resume training.

Fitness training during your break will increase your chances of surviving the return to work. More dance classes are not necessarily better, adjunctive training (swimming, jogging, long energetic walks or cycling) rests the muscles that are constantly at work during dance activity and increases cardiovascular endurance. Particularly after an injury, be aware of your internal messages. Take the advice of a dance medicine specialist before you return to class and again when you intend to increase your work load.

Physical Fitness

Cardiovascular endurance

It is now recognised that the structure of most dance classes is anaerobic

A high Maximum Aerobic Capacity (V02 max: the maximum amount of oxygen that an individual can utilise to produce the energy required for work) is a positive factor in injury prevention.

cardiovascular endurance is improved by working with an increased pulse rate for a sustained 30 minute period. Regular (e.g. three times a week) jogging, cycling or aerobic classes will achieve this.

One of the possibilities in dance would be to structure time management of the training class in an endeavour to increase V02 max. (This also means that the teacher must use less time speaking between exercises).

The pulse rate (heart beat per minute) rarely exceeds 120 during the first 50 minutes of a dance training class. It is therefore necessary to make certain that during the last 30 minutes the pulse rate (equivalent to the work load) is sufficient to increase the V02 max. (rest pulse plus 75% of the difference

between rest pulse and maximum pulse). This will enhance cardiovascular workload. All jumping/running combinations could be 32 or 48 bars long. The groups could be divided equally so that everyone would work and rest at planned intervals, turning that section of the class into interval training as used in physical training programs. Naturally much of this depends on the level of ability in the students. The length of combination in some jazz classes is already a step in the right direction.

Despite this kind of innovation the bottom line is: adjunctive cardiovascular training is a must for the individual who intends to survive the long hours of dance training, rehearsals and performance without injury.

Stretching

Stretching and strengthening should always be done in tandem, but for the sake of clarity I will write about them separately.

A wide range of movement in the joints is a prerequisite for the dancer. However, flexible joints must be protected by adequate and balanced muscle strength.

Both static and dynamic flexibility are essential to the dancer. Static flexibility relates to the ability to move through a range of motion with no emphasis on speed or time (i.e. *développé*). Dynamic flexibility corresponds to the ability to move through a range of motion with emphasis on speed and time (i.e. split jumps). Both types of flexibility are specific; that is, the amount or degree of motion is specific for each joint. This basically means that flexibility in one joint does not indicate that other joints have the same range of motion. All stretching programs should be carefully planned for the individual.

Since Laurence E Holt published his *Three S's for Sport* in 1967 there has been an explosion of literature on the subject of stretching. There are many types of stretching techniques, for a comprehensive overview Michael Alter's *Science of*

Stretching offers information both for and against the different types.

Francine St George's description in her *Muscle Fitness Book* is an appropriate general approach to the subject.

Hold all stretches for a minimum of 6–10 seconds, relax and breath out as you move into the stretch. Do not ease back too far before repeating the stretch. Repeat a minimum of three times. For tighter muscles try to hold the stretch for longer. Push to the point of discomfort but do not push through pain. No exercise should produce pain.

Effective use of stretching techniques is necessary after all forms of training. The best time to stretch effectively is when the muscles are warm, for example after class, rehearsal or performances.

Strengthening

It is important to strive for a balance between flexibility and strength in order to avoid injury. It is not the number of repetitions that increases the strength but the high loads, such as holding the leg in extension. In the dance world, endurance is often confused with strength (how many, instead of how much). A balance between muscle groups must also be achieved when strengthening. Cybex and other apparatus used to measure and strengthen are available in sports medicine clinics and some dance medicine clinics and can be used as an adjunct to dance training. Supplementary strength training is a must. As an increase in strength requires overload, weights are a helpful addition to training.

Flexible joints must be protected by adequate and balanced muscle strength. Working out in a gymnasium is a useful adjunct to dance training. The fear held by many female dancers that they will 'bulk' with weight training is unfounded (Natalie Makarova's training program has demonstrated this).

Body measurements (anthropometry)

We are all aware that too much weight is damaging to the hips and knees in some techniques. The questions are, how much and what type of weight is too much and who decides? These questions may be put into a useful perspective by the 'O' scale system that is now in use at the Australian Institute of Sport and available through a nutritionist/physiologist in most large cities. The system was designed expressly to assist health professionals in their efforts to provide clients and patients with the very best assessment presently available. It can give the dancer an indication as to the ratio of lean muscle to adipose (fat) tissue which responsible dancers can then utilise on a continuing basis to assess the effects of training and diet on their physiology.

Fluid Replacement

Particularly in Australian climatic conditions fluid replacement is of paramount importance. Dehydration can lead to muscle cramping, exhaustion, nausea and injury due to fatigue. A good general rule is to drink a glass of water or juice for every 20 minutes of vigorous dancing.

Also of importance is consumption of a low fat, high complex carbohydrate diet.

No article on fitness is complete without some mention of nutrition but as this is the subject of another lesson I will just make a passing comment.

The complex carbohydrates found in breads, grains, fruit, and vegetables should constitute 60% of the daily calorie intake. Remember, 'food is a friend' (this does not include junk foods), fat should be less than 25% (so count the chocolate bars) and protein 12–15% of the daily calorie intake.

Substance Abuse

A drug is any substance that, when taken into the system of a living organism can modify one or more

of its functions. That includes nicotine, alcohol, psychostimulants (pep pills), appetite suppressants, sedatives, tranquillisers and anti-inflammatory drugs.

Some salient questions with regard to health, safety and self esteem would include 'Do I have history of substance abuse?'

Just asking this question would reinforce in the mind of all members of the dance community their own attitudes to these issues with regard to health, safety and self esteem.

The question of substance abuse brings us back to the question of a lifestyle that matches the dancer's ambition as well as a life style that may represent a role model; there is always a choice to be made.

Environment

Floor structure, texture of floor surface, height of ceiling and ventilation are some of the aspects to be considered. Concrete surfaces and crowded or poorly ventilated studios should be treated with suspicion and if possible, avoided completely.

Soft Tissue Injuries

Soft tissue injuries are either acute (suddenly occurring as the result of a single incident) or chronic (coming on gradually over a period of time).

Acute soft tissue injuries are caused either by external forces e.g. blows, falls resulting in contusion, sprain or dislocation or internal forces, e.g. excessive muscular action, resulting in a torn muscle or strain. These injuries can also be caused by fatigue or poor technique.

If, despite all precautions, acute soft tissue injury does occur, a fully stocked first aid kit should be at hand with instructions for the procedures referred to as R.I.C.E.D. This must be followed up by avoiding the H.A.R.M factors (see page 116).

Rest: Injured tissue must have a period of rest. Do not continue dancing.

Ice: Ten minutes at a time is frequently better than one long application. Application of ice reduces blood supply to the area and so limits bleeding into the tissues. Reduction of pain is also a direct effect of cold on nerve endings.

Compression: Use a moderately firm bandage to control swelling. This limits bleeding and the collection of fluid in tissues and joints.

Elevation: Elevate the injured body part to help venous drainage. This limits swelling by the effect of gravity and assists lymphatic drainage of the serous fluid.

Diagnosis: Get a professional opinion as soon as possible.

Avoid any of the H.A.R.M. factors:

Heat: increases swelling;

Alcohol: increases swelling;

Running or dancing: aggravates the injury;

Massage: increases bleeding in the first forty-eight hours

Chronic soft issue injury

Medical treatment involves such things as rest, physiotherapy, anti-inflammatories or analgesics to reduce pain and tissue damage, and surgery. R.I.C.E. does not help and the application of liniments, or propriety creams — continued use especially — are contraindicated (St Johns Ambulance Association in Australia).

Overall Fitness and the Developing Artist

Even with the advent of dance science, there would still have to be consideration taken for the

developing artist. Those in charge of schools and companies can help to create an awareness and an expectation that those who share responsibility for the development of the individual dancer would be required to have a basic knowledge of functional anatomy and motor development or access to experts and a willingness to consult them.

Concepts and theories are also developing and it is now acknowledged that 'changes in motor skill performance are age-related and occur throughout the entire life span'. The chronological age for various developmental periods is undergoing revision. Adolescence, it is conceded, can extend in girls to 18 years and in boys to 20 years. This has ramifications for the training of this group, i.e. too early subjecting of the skeletal structure of adolescents with differing growth rates to the functional stress of an advanced dance technique can have long-lasting negative effects. In young adults, the diaphyses are separated by an epiphyseal cartilage or plate that provides the means for the bone to increase in length. In terms of training this means that the end of the bones where the tendons are attached are not fully developed and will not take the strain placed upon them if the adolescent is given adult training loads too early.

Once the individual is accepted into a school/program/company, a 'Physical Capacity Profile' could be organised. An excellent example is to be found on page 35 of *Towards better Coaching* put out by the Australian Coaching Council in 1986. This would enable the teachers, ballet masters and choreographers (who have now taken shared responsibility for the development of the individual) and the students/dancers themselves to be more fully aware of the physical strengths/limitations, muscle balance/imbalance and vulnerable points (regarding training load, working hours and types or technique to be mastered).

Focusing on the strengths of the individual rather than emphasising their limitations would be more beneficial to their development. Such an attitude would in turn contribute to the enhancement of their self image and encourage dancers to accept and

share the responsibility for care of themselves as fully functioning artists.

Conclusion

Overall fitness is a prerequisite for the maintenance of injury-free dance enjoyment leading to quality lifestyle and choice. Following is a check list for the care of the dancer.

1. Overall Fitness
2. Warm up/Cool down
3. Alignment
4. Graduated training load
5. Physical Fitness
6. Fluid replacement
7. Consumption of a low fat, high complex-carbohydrate diet
8. Substance Abuse
9. Environment
10. R.I.C.E.D/H.A.R.M.

I have attempted in this article to adapt and cross-fertilise the terminology from sports medicine, physiology and psychology. The aim is to use dance science in an endeavour to ensure the quality of the dancer's life and enrich our art form.

QUESTION 1: The main way to avoid injury is?

- A Take more dance classes
- B* Prepare the body before taking dance classes
- C Focus on fitness in the studio
- D Sidestep particular movements

QUESTION 2: Why is appropriate alignment important?

- A* Muscles work minimally if the body is aligned
- B Non-aligned bodies tolerate stress better
- C Because it will change your dietary habits
- D It improves cardiovascular endurance

QUESTION 3: Alignment can deteriorate?

- A With a change of diet
- B When your level of fitness increases
- C If you change dance styles too often
- D* Under the stress of an increased work load

QUESTION 4: Warm-up should include?

- A A hot shower
- B Application of liniment
- C* 15 minutes of continual movement
- D Fast leg swings at the barre

QUESTION 5: After warm-up then rest, how long before the muscle temperature has returned to pre-warm-up levels?

- A 1 hour
- B* 45 minutes
- C 30 minutes
- D 15 minutes

QUESTION 6: Pain is an indication that:

- A you are making progress
- B* you have gone too far with your exercises
- C you deserve praise for suffering
- D you are suffering for your art

QUESTION 7: Adjunctive training:

- A interferes with your dance training
- B is not appropriate for dancers
- C* rests the muscles that are constantly at work during dance activity
- D does not change your life style

QUESTION 8: Why would you want to increase your cardiovascular endurance?

- A It will help to increase the height of my legs
- B It makes lifing in double-work easier
- C* It is a positive factor in injury prevention
- D It enables me to get out of bed more easily in the mornings

QUESTION 9: How would you increase your cardiovascular endurance?

- A with regular exercise, e.g. jogging, cycling or aerobic classes
- B do more dance classes
- C take regular massages
- D eat less fatty foods

QUESTION 10: To be effective, all stretches should be held:

- A until the pain is too much
- B for a minimum of 1–5 seconds
- C until the muscle has reached the length you desire
- D* for a minimum of 6–10 seconds

QUESTION 11: Effective use of stretching techniques are necessary:

- A* After all forms of training
- B Only during the dance class
- C Only after strength training
- D Only after cardiovascular endurance training

QUESTION 12: Strengthening exercises should be a part of your dance training because:

- A This type of training will reduce fatigue
- B* Flexible joints must be protected by adequate and balanced muscle strength
- C It will suppress your appetite
- D It will curb your desire to smoke

QUESTION 13: Who is ultimately responsible for assessing the effects of training and diet on the dancer's physiology?

- A The dancer's teacher
- B The dancer's doctor and physiotherapist
- C* The mature dancer
- D The dancer's employer

QUESTION 14: In the event of a chronic soft tissue injury would you:

- A Wear extra warmers over the injured part
- B Apply liniment
- C Use R.I.C.E.D procedures
- D* Rest and consult a physician

QUESTION 15: When a soft tissue injury does occur you should:

- A Apply heat immediately
- B Massage gently
- C* Begin the R.I.C.E.D procedure immediately
- D Continue dancing and hope nobody notices

Parents' Code of Behaviour

In the area of vocational dance where the student is often a high achiever, perceived pressure to please parenting figures can add to the stress, both positive and negative, of daily living and growing. The following suggestion for a code of behaviour for parents is intended to support the parenting figures in their efforts to reassure their offspring that dance is for the child's own enjoyment and they are loved for themselves, not only for their achievements.

The following is adapted from National Aussie Sport Program Coaching Manual, Australian Sports Commission, Bruce, ACT.

- If children are interested, encourage them to dance. However, if children are not willing to dance, do not force them.
- Encourage dance students to see live professional performances as often as possible.
- Focus upon the child's efforts and performance rather than the overall outcome of the examination, performance or audition. This assists the children in setting realistic goals related to their ability by reducing the emphasis on winning.
- Teach children that an honest effort is as important as a victory, so that the results of each examination or performance are accepted without undue disappointment.
- Encourage children to always participate according to the rules.
- Never ridicule or yell at a child for making a mistake or not passing an examination.
- Remember, children are involved in dance for their enjoyment, not yours.

- Remember, children learn best from example. Applaud good performances by all of the performers.
- If you disagree with an examiner, adjudicator or critic, raise the issue through the appropriate channels rather than questioning the official's judgment in public.
- Support all efforts to remove verbal and physical abuse from dance activities.

Appendix 1

Key Ingredients of Prevention Programs

Source: WT Grant Consortium on the School-based Promotion of Social Competence. Drugs and Alcohol Prevention Curricula. in J. David Hawkins et al. Communities that Care (San Francisco: Jossey-Bass 1992).

The key ingredients of effective programs include:

Emotional Skills

- Identifying and labelling feelings
- Expressing feelings
- Assessing the intensity of feelings
- Managing feelings
- Delaying gratification
- Controlling impulses
- Reducing stress
- Knowing the difference between feelings and action

Cognitive Skills

- Self talk — conducting an 'inner dialogue' as a way to cope with a topic or challenge or reinforce one's own behaviour
- Reading and interpreting social cues — for example, recognising social influences on behaviour and seeing oneself in the perspective of the larger community
- Using steps for problem solving and decision making — for instance, controlling impulses,

setting goals, identifying alternative actions, anticipating consequences

- Understanding the perspective of others
- Understanding behavioural norms (what is and what is not acceptable behaviour)
- A positive attitude towards life
- Self-awareness — for example, developing realistic expectations about oneself

Behavioural Norms

- Nonverbal — communicating through eye contact, facial expressions, tone of voice, gestures, and so on
- Verbal — making clear requests, responding effectively to criticism, resisting negative influences, listening to others, participating in positive peer groups

Appendix 2

Prevention Measures — injuries

Five risk factors for overuse injuries:

Prevention is better than cure

This check list was developed by the Sports Medicine Division at Harvard Children's Hospital (Micheli 1983). It includes the five risk factors for overuse injuries, with the first factor being most important.

- Training errors, including abrupt changes in intensity, duration or frequency of training
- Musculo-tendinous imbalance affecting strength, flexibility or both
- Anatomical alignment of lower extremity, including differences in leg length, abnormality or rotation of the hips, position of the kneecap, and bow legs, knock knees or flat feet
- Shoe wear: improper fit and inadequate impact absorbing material
- Floor surfaces

Appendix 3

Safe weight loss

A recommendation for safe weight loss in the dancer, modified from Eisenman et al. (1990)

- **Identify realistic goals:** Dance students must eat sufficient calories to avoid the loss of muscle tissue, and should start a weight loss program weeks before training begins. Changes in body composition should be monitored on a regular basis.
- **Monitor weight:** The teacher or others educated in weight-control methods should set realistic goals that address methods of dieting, rate of weight change, and a reasonable target range of weight or body fat. After the dancer has reached the target and percentage of body fat, the teacher should continue to monitor weight and body composition to detect any continued or unwarranted losses or weight fluctuation. Private weigh-ins/measurements of body composition to reduce the stress, anxiety or embarrassment of public assessment should be employed.
- **Provide nutritional guidance:** The teacher should not tell dance students to lose weight without providing them with proper guidance. Rather the teacher should provide a total nutritional program that includes general nutrition counselling as well as help in appropriate methods of weight loss or weight gain. If the teacher has no education in nutrition, a registered dietitian, if available, can help the individual to plan nutritionally adequate diets. Throughout this process, the role of overall, long-term good nutrition practices and weight control in optimising the performance should be emphasised.
- **Be aware of symptoms:** If a dance student exhibits symptoms (see definitions, appendix

5) of an eating disorder, the dance student should be confronted with the possible problem.

- **Seek professional help:** Teachers should not try to diagnose or treat eating disorders, but they should be specific about their suspicions and talk with the student about the fears or anxieties they may have about food and performance.
- **Be a team member:** The teacher should assist and support the dance student during treatment.

Appendix 4.

Training variables for graduated workload

The training variables for graduated workload are frequency, intensity and time.

- Frequency: This refers to how often the dance classes and/or rehearsals occur.
- Intensity: This refers to how physically demanding or difficult a class and/or rehearsal is.
- Time: This refers to how long an exercise lasts.

Overload

The principle of overload holds that the body system must be challenged above a certain threshold to provide sufficient stimuli to produce improvement. Beware of too much, too soon. However, the same exercises every day will not produce overload.

Specificity

The principle of specificity holds that training adaptations are specific to the cells, structures and functional elements that are overloaded.

Reversibility

Another expression for this would be detraining. How quickly it occurs depends on the type of conditioning. However it appears that cardiovascular conditioning declines most rapidly. A full explanation for this is to be found in *Science of Dance Training* by P.M. Clarkson and M Skrinar, published by Human Kinetics Books, Champaign, Illinois in 1988 (p.47).

Appendix 5

It is extremely important to differentiate between the dancer with a clinical eating disorder (i.e., anorexia nervosa or bulimia nervosa) and one who manifests a sub-clinical eating disorder.

Definitions of clinical eating disorders

The following information on clinical disorders is taken from *Diagnostic and Statistical Manual of Mental Disorders* (Third Edition Revised) DSM-111-R Washington DC: American Psychiatric Association 1987: 65–69

Anorexia Nervosa (section 307.10)

A. Refusal to maintain body weight over a minimal normal weight for age and height, e.g. weight loss leading to maintenance of body weight 15% below that expected; or failure to make expected weight gain during period of growth, leading to body weight 15% below that expected.

B. Intense fear of gaining weight or becoming fat, even though underweight.

C. Disturbance in the way in which one's body weight, size, or shape is experienced, e.g. the person claims to 'feel fat' even when emaciated, believes that one area of the body is 'too fat' even though obviously underweight.

D. In females, absence of at least three consecutive menstrual cycles when otherwise expected to occur (primary or secondary amenorrhoea). (A woman is considered to have amenorrhoea if her periods occur only following hormone, e.g. estrogen, administration.

Bulimia Nervosa (section 307.51)

A. Recurrent episodes of binge eating (rapid consumption of a large amount of food in a discrete amount of time.

B. A feeling of lack of control over eating behaviour during the eating binges.

C. The person regularly engages in either self-induced vomiting, use of laxatives or diuretics, strict dieting or fasting, or vigorous exercise in order to prevent weight gain.

D. A minimum average of two binge eating episodes a week for at least three months.

D. Persistent overconcern with body shape and weight.

Definition of a sub-clinical eating disorder

Anorexia Athletica

Criteria for sub-clinical eating disorders as reported by Pugliese et al. (1983) and modified by Sungott-Borgen (1992)

Common features	Fear of obesity Pugliese	Anorexia athletica Sundgot-Borgen
weight loss (>5% of expected body weight)	(+)	+
delayed puberty ^a	(+)	(+)
menstrual dysfunction ^b	—	(+)
gastro-intestinal complaints	—	+
absence of medical illness or affective disorders explaining the weight reduction		+
distorted body image	—	(+)
excessive fear of becoming obese		+
restriction of food (>1,200 kcal/day)		+
use of purging methods ^c	—	(+)
bingeing	—	(+)
compulsive exercise	—	(+)

Note, + = absolute criteria; (+) = relative criteria; — = not used in diagnoses.

^a No menstrual bleeding at age 16 (primary amenorrhoea). ^b Primary amenorrhoea, secondary amenorrhoea, oligomenorrhoea. ^c Self-induced vomiting, laxatives and diuretics.

Appendix 6

Menstrual Irregularities

Source: *Stedman's Medical Dictionary* 25th Edition
Williams and Wilkins London Sydney 1990: 54,
1110

Definitions

Amenorrhoea: Absence of menstrual periods

- *primary*: failure to start menstruating by the age of 16
- *secondary*: the temporary or permanent cessation of periods in a women who has menstruated in the past
- *dietary*: loss of menstrual function due to rapid weight loss or gain
- *emotional*: caused by a strong emotional disturbance
- *jogger's*: temporary cessation of menstrual function due to strenuous, daily, exercise, as in jogging
- *Euamenorrhoea*: normal menses
- *Oligo*: a prefix meaning few, little, or scanty (amenorrhoea)

Osteoporosis: reduction in the quality of bone or atrophy of skeletal tissue

- *juvenile*: idiopathic with onset before puberty, leading to pain or fracture

Osteopenia: decreased calcification or density of bone — a descriptive term applicable to all skeletal systems in which such a condition is noted; reduced bone mass due to inadequate osteoid synthesis

Research by Horvath et al. in their 1989 paper 'Osteopenia as a risk factor for injuries to dancers' suggested that the use of *calcitonin* might have protected young dance students from demineralisation, preventing fractures.

Appendix 7

The characteristics of addiction

Source: Lefevre, R. 'Eating Disorders'. Brinson P. (Ed.) International Working Papers on Dance Issue number 1. Laban Centre for Movement and Dance, Laurie Grove London:1992:33.

The characteristics of addiction according to Lefevre are quite clear in the same way as the characteristics of diabetes are quite clear. There are eight of them, as follows:-

1. Pre-occupation. Looking forward to use. Planning life around it. Making plans for specific times of abstinence.
2. Use alone. Use in private is just as comfortable as (or even more than) in company.
3. Use for effect. A special 'lift', 'feel', or 'buzz' is sought from the substance or behaviours, rather than simply the taste or , most of all, to suppress uncomfortable emotional feelings.
4. Uses as a medicine. The substance or behaviour may be used to help to relax or to help sleep or to provide stimulation or, most of all, to suppress uncomfortable emotional feelings.
5. Protection of supply. The substance or behaviour is used to smother disturbed feelings. Its supply (or the money, time and other things required for it) tend to be disproportionately carefully protected.
6. Using more than planned. Incapacity to predict what will happen after the first use of the substance or behaviour on any occasion.
7. Increased capacity. Greater capacity than others to use a particular substance or behaviour. In the last stages of the disease this 'tolerance' is lost.

8. Memory blackouts. Memory may cease to function when a person is intoxicated or otherwise overloaded. This may lead to loss of awareness that conversations or events ever took place. (This 'denial' needs to be exposed by not covering up the damaging consequences of use of the substance or behaviour).

