Professional Practice

(7DC011/UW1)

A Multidisciplinary Intervention Strategy for a Case Study Participant

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A Multidisciplinary Intervention Strategy for a Case Study Participant

Demands on the classical ballet dancer. Training for classical ballet begins at an early age and in addition to possessing a body that fits the aesthetic mould of classical dance; precision, strength, endurance, artistry, musicality, creativity and flexibility are demanded during these long years of training. Later, as Angioi et.al (2009) wrote, "At professional level […] dancers must be experts in the aesthetic and technical side of the art, psychologically prepared to handle the stress of critical situations and be free from injury; most importantly they must be physically ' fit '" (p. 475).

A typical working day for a dancer employed in a state-run theatre begins with a ballet class lasting for 75-90 minutes. Long hours of rehearsals and then performances follow. Tradition plays an important role in this art form, and although over the last two decades new teaching ideas and physical concepts have begun to make their mark, the traditional aesthetic, etiquette and training philosophy of classical ballet still very much remains. Traditionally, the professional dancer is expected to have a sylph-like physique. Warren, G.W. (1989) states that the ideal height of a female dancer is between 5ft 2in and 5ft 8in ((158.5-176.7cm) with body weight of 85-115 pounds (38.5kg- 52.2kg) aspiring ballet dancers must meet basic requirements and it is "never acceptable to be overweight", (Warren, 1989, p. 64). Although the literature from Warren is now over 30 years old, these ideals are still strived for in classical ballet and it is still commonly acknowledged that physically, the desired ideal aesthetic will automatically open doors within the ballet world (Warren, 1989).

In recent years, alongside of the traditional demands, the dancer is required to contribute to the creation of choreography, to be able to improvise and offer conceptual ideas. Moreover, an even wider repertoire of dance skill is required. Ballet dancers nowadays are expected to master modern, contemporary, jazz and tap (e.g. the Mad Hatter in Christopher Wheeldon's production of Alice's Adventures in Wonderland for The Royal Ballet does a tap routine). Furthermore, the amount of fixed contracts for dancers has drastically diminished

and many dancers work as freelancers, which means they will often not have an end of season break due to lack of financial income, leaving them more vulnerable to fatigue and injury. Literature from Butterworth (2004) states:

> In current choreographic practice the variety of dance languages, modes of structuring dance material and degrees of social interaction required in the studio are extensive. Dancer/performers often work in essentially short-term and challenging environments and are required to engage in a range of dance-making situations in a variety of contexts. (pp. 64-65)

Meeting demands.

"The physical demands placed on dancers from current choreography and performance schedules make their physiology and fitness just as important as skill development" (Angioi, Metsios, Koutedakis, & Wyon, 2009, p. 475). Therefore, staying in top form and remaining illness and injury free should be the highest priority for a dancer. Nonetheless, there is ample evidence in research that shows dancers are generally not strong enough to cope with the demands of their job and that supplementary conditioning training is vital in order to meet these demands (Brinson & Dick, 2006), (Koutedakis & Jamurtas, 2004), (Twittchet, Koutedakis, & Wyon, 2009) and (Wyon, Head, Sharp, & Redding, 2002). Dancers are, however, often conditioned in their education and within their peer group to believe that any extra strength training builds ugly large muscles and spoils aesthetics. Research has shown that this is not the case and that performance is actually enhanced by supplemental strength and fitness training (Twitchett E. , Angioi, Koutedakis, & Wyon, 2011) and (Angioi, Twitchett, Metsios, & Koutedakis, 2012). While ballet trains skills, (Krasnow & Chatfield, 1996) and (Wyon, Redding, Abt, Head, & Sharp, 2004) optimal strength, power and endurance cannot be reached through ballet training alone. Research from Wyon, et al. (2002,

p. 44) stated that although a dance class has been classified as high intensity intermittent exercise, (Dahlstrom M, 1996) and (Rimmer & Plowman, 1994) this only really applies to the centre work phase.

While gradually, mainly in the top level schools and companies, the importance of supplementary physical training has begun to be recognized psychological fitness, particularly in light of the recent allegations of psychological abuse in one of the top European ballet schools, (Marshall, 2019), (Henley, 2019) and (Trenkler, 2019) is often disregarded and dancers frequently suffer from low self-esteem, self-orientated and socially prescribed perfectionism, burnout and eating disorders, (Nordin-Bates & Abrahamsen, 2016), (Eusanio, Thomson, & Jaque, 2014) & (Nordin-Bates & Madigan, 2017). Research reports that female dance students and professional ballet dancers consume below 70% and 80%, respectively, of the RDA of energy intake (Koutedakis & Jamurtas, 2004, p. 656). Unfortunately it has been shown that not only do dancers have an intake deficit of calories, but also the quality and balance of nutrition is often lacking. Brinson and Dick (2006, p. 69) found that generally dancers had a sub optimal intake of 50% carbohydrates which came from highly processed junk foods and that dancers consumed more fatty foods than other athletes plus, the percentage of these were higher than the accepted maximum of 30% of overall energy intake.

Nutritional intake highly affects the three energy systems; PCr anaerobic, lactic acid (glycolysis) anaerobic and aerobic (oxidative) systems, which synchronise to work simultaneously at different intensities and volumes, depending on physical and situational demands. (McArdle, Katch, & Katch, 1996, pp. 195 & 129-130).

The phosphagen ATP PCr anaerobic system is used for very powerful movements (Baechle & Earle, 2008, p. 24), e.g. the beginning of a strenuous choreography. Here, energy rich phosphocreatine (PC) stored directly in the muscle cells (and the brain) is utilised. These stores recuperate in the resting phase after training or performance (Koutedakis & Sharp, 1999, pp. 15-16). The lactic acid glycolysis anaerobic system lasts for around 45 seconds of

intensive exercise, e.g. for the black swan´s 32 *fouetté*. The aerobic oxidative system relies on the break-down of fats and carbohydrates and is utilized for longer periods of lighter activity. (Koutedakis & Sharp, 1999, pp. 18-20) and (Baechle & Earle, 2008, pp. 29-30). Although dancers mainly use the oxidative system they need to train all three systems (Koutedakis & Jamurtas, 2004) and need to be aware of how the correct functioning of these systems is linked to nutrition, training and subsequently, the quality of their dancing.

High quality nutrition for high quality dancing should include complex carbohydrates; whole grains, legumes, vegetables. Fat should be from oil (olive, linseed, sunflower etc.), nuts, oily fish and butter. Protein should be from eggs, lean red and white meat, fish, nuts, cheese, and tofu. The important vitamins and minerals for dancers; vitamins, C, D and E, vitamin B complex, folic acid, calcium, magnesium and iron must be included. Vitamin B complex against e.g. tiredness, lack of concentration, cramps, and anemia, vitamin C for the immune system, folic acid cell growth and repair, vitamin E for the immune system and D for bone density (Simmel & Kraft, 2016, S. 38-40). Calcium is also needed for bone density, Magnesium prevents muscle cramps and iron is needed among other things, to prevent tiredness, keep the immune system strong and to promote good sleeping patterns.

Case Study

Subject. A healthy 28 year old female professional dancer, height 173cm, weight 59kg was observed over a period of 6 weeks. Using the Harris-Benedict BMR (female) equation, basic metabolic rate[1] was calculated: 655.1 + (9.563 × weight in kg) + (1.85 × height in cm) − (4.676 × age in years) giving a BMR of 1401.2 kcal. Also Age Predicted Maximal Heart Rate was calculated by subtracting age (28) from 120, giving an APMHR of 192 bpm[2].

The dancer works in the Volksoper Theatre in Vienna and also on a freelance basis. A

[1] The amount of calories the body needs within 24 hours just to function
[2] Relevant for calculating optimal HR training zones.

greater part of her day is spent in training and rehearsals plus teaching. She sometimes takes part Bikram Yoga classes and goes running. At the time of testing she had not been running regularly for a while. The dancer filled in and signed a consent form (Appendix A) and completed a pre-test questionnaire (Appendix B) before any tests were undertaken.

Goals. The dancer stated that she had a problem with maintaining concentration in class and rehearsal and that she would like to improve her attention span. She stated that she would like to lose weight and have more self-confidence. She mentioned a desired weight loss of 11 Kilos which the researcher did not think agreeable or safe. Post Ballet DAFT test the dancer stated that improving aerobic condition, power and strength was also necessary.

Table 1 *Basic data of dancer*

Sex	**Female**
Age	28
Weight	59 kg
Height	173cm
Body Mass Index (BMI)	19.7 kg/m².
Basal Metabolic Rate (BMR)	1401.2 kcal
Age Predicted Maximal Heart Rate (APMHR) Formula: APMHR=120 – Age (Baechle & Earle, 2008, p. 123)	192 bpm

Screening and Methodology

Physiology. Data was collected through class observation, a performance profile, Ballet DAFT test, 5 day food diary and list of work and sport physical activities over 5 days to calculate energy expenditure.

i. Class Observation

The dancer was observed and evaluated by the researcher in a 90 minute classical ballet class.

ii. Performance profiling

For the performance profiling[3], 12 qualities were decided upon; power, flexibility, endurance, coordination, strength, agility, speed, muscular endurance, balance, proprioception, exactness, musicality and turnout. Independently, the dancer and the researcher rated these qualities using a 10 point scale, 10 being the highest (best) and 1 the lowest.

ii. Ballet DAFT: Dance Aerobic Fitness Test

The Ballet DAFT fitness test has been specially developed by the Dance Faculty at Trinity Laban[4] to test ballet dancers´ aerobic fitness levels. "The test consists of five stages, each four minutes long, that increase in intensity. It uses classical ballet movement of an intermediate-level of difficulty, thus emphasizing physiological demand rather than skill." Twitchett et al. (2011b) wrote that, “While classical ballet is an intermittent form of exercise requiring a good aerobic foundation, research has shown that dancers actually have poor aerobic capacities compared to athletes taking part in similar activities” (p. 123). The test mimics the aerobic demands of a performance and has the benefit of being able to be used as a training tool to reach required aerobic levels for performance, plus it can be carried out in an environment familiar to the dancer and incorporates familiar movements.

This test was carried out 30 minutes after a ballet class with a warm-up before-hand and a cool-down afterwards. A TomTom Spark 3 Cardio Fitness-Tracker was used. The dancer was able to judge feelings of exertion for each stage using the Borg RPE 15 point Scale (Rating of Perceived Exertion). The evaluator rated sequencing, co-ordination, exactness, travelling

[3] Developed by Richard Butler in 1992.
[4] Trinity Laban Conservatoire of Music and Dance in the UK

distance, *port de bras*, jump height, movement quality, *arabesque* height and effort level during the test. At the onset of the test and after each of the five stages of the DAFT test the HR was recorded. The dancer was informed that she could terminate the test if needed.

iii. Food diary over 5 days

The dancer recorded everything that she ate in a five day period. For dancers, 1-2 grams of protein per kg body weight per day is advised (Koutedakis & Sharp, 1999, pp. 32-47). Fat should not consist of more than 30% of the overall daily energy intake (Brinson & Dick, 2006) and is normally used for low intensity muscular work, in order to save carbohydrates stores for more demanding work. Fat is vital as protection for the organs and for insulation (McArdle, Katch, & Katch, 1996, p. 20) and absorbs vitamins, forms an essential part of cell membranes and nerve fibres. Carbohydrate, for physically active people, should account for roughly 60% of the daily energy intake. Carbohydrate/Glycogen used for rapid energy supply is stored in the muscles and the liver and the intake thereof must be sufficient in order to maintain these glycogen stores. (McArdle, Katch, & Katch, 1996, p. 10).

iv. Dancer´s expected calorie expenditure over 5 days

The dancer first calculated the time consumed for physical activities in an average five day period. Using the appendix "Energy expenditure in Household, Occupational, Recreational and Sports Activities" in McArdle et.al (1996, pp. 769-781) the dancer´s expected calorie expenditure over this time-span was calculated. McArdle et.al showed *Yoga* as needing 3.7 kcal, *Choreographed Dancing* (rehearsal) needing 6.1 kcal, *Sitting Quietly* (text rehearsal) needing 1.2 kcal, and Calisthenics (body weight exercises) needing 4.4 kcal, per minute. The median expenditure of calories for a 90 minute ballet class according to Rossiou et.al (2017) is 327. No literature on calorie expenditure for teaching ballet could be found therefore

Dancing: aerobic easy in the McArdle appendix was used- for a 59 kg individual 5.9 kcal per minute is stated; the dancer teaches young children and is moving (running, jumping etc.) for the duration of her classes.

Psychology. Alongside of an informal meeting where only rough notes were gathered and a recorded interview, three psychological tests were carried out. The dancer absolved these alone at a time that was convenient within her schedule.

i. Personal interview

The tester and the dancer first met informally in a café. In order to win the dancer´s confidence, no recording was made apart from sparse notes. A second interview, designed on what the dancer had revealed in the informal meeting was recorded a few days later, in a ballet studio, after absolving the DAFT. The recorded interview took place in the ballet studio to help keep the dancer focused on the subjects discussed.

ii. Body Esteem Scale for Adolescents and Adults

In order to better understand the dancer´s feelings about her body, the Body Esteem Scale for Adolescents and Adults (Mendelson, Mendelson, & White, 2001) was used. This is a self-evaluation scale of one´s body and it´s appearance to others consisting of 21 questions and is calculated using a 5 point Likert scale; Never = 1, Always = 5.

iii. Workplace PERMA-Profiler

The dancer´s positive and negative feelings about her workplace were shown using the Workplace PERMA-Profiler (Kern, 2014) .This evaluates five pillars of wellbeing in the work place; Positive and Negative Emotion, Engagement, Relationships, Meaning and

Accomplishment. The profiler consists of 23 questions and is calculated using a 10 point Likert scale; 0 = not at all, 10 = completely.

iv. Mindfulness Attention Awareness Scale

In an attempt to understand the dancer´s problems with concentration the Mindfulness Attention Awareness Scale (MAAS) (Brown & Ryan, 2003) which evaluates receptiveness to the surroundings and attention to present events was used. This scale consists of 15 questions and is calculated using a 6 point Likert scale; 1 = Almost Always, 6 = Almost Never.

Results of Screening

Physiology. Initially, during the class observation, deficits in physical fitness were not very apparent. However, during the DAFT insufficient fitness was clearly shown. None of the exercises in the ballet class were as long as the stages in the DAFT, or as taxing as the last stage. Therefore the deficits in strength, endurance and power were not apparent when observing the class work.

i. Class Observation

Generally the dancer was very precise and controlled but lacking in dynamics. The dancer was often preoccupied with the mirror throughout the class. This gave her an attitude of dreaminess. She did not seem to be very aware of her surroundings; it was as if she could only see her mirror image and not actually feel her body. Concentration was first noticeably lost during the *adage* in the centre and later on in the early stages of the *allegro* training but regained for the larger jumps. Dynamics and expression steadily deteriorated after the *adage* in the centre. Perhaps this was due to standing *en face* to the mirror in the centre work instead of only having access to the side view as at the barre.

Table 2 *Class observation*

Class Section	**Positive**	**Negative**
Barre	Good coordination, good use of available turn-out. Well controlled port de bras. Precise, strong foot- work. Good musicality.	Twists the hips towards the working leg. Maybe this comes from trying too hard to turn-out the working leg.
Centre *Adage*	Good flexibility. Good coordination, good use of available turn-out. Very good feeling for line and shape.	Seems preoccupied with the mirror.
Pirouettes	Good coordination and control. Good balance. Seemed very determined to master triple *pirouettes*.	Occasionally lacked dynamics – seemingly still preoccupied with the mirror. Slightly frustrated.
Petit Allegro	Very good coordination and use of turn-out. Good agility. Well controlled port de bras. Precise and strong foot-work. Good *ballon*. Was very exact.	Lacks expression-dynamics. Focus seems on the mirror. Concentration gets lost occasionally.
Batterie	Very good coordination and use of turn-out. Well controlled port de bras. Precise, speedy and strong foot-work. Good *ballon*. Was very exact.	Lacks expression-dynamics. Focus seems on the mirror. Concentration gets lost occasionally.
Medium Allegro	Good coordination and use of turn-out/ *en dehors*. Well controlled *port de bras*. Good musicality	Lacked dynamics and expression. Lacked use of *plié*. Seems preoccupied with the mirror.
Grand Allegro	Very exact Endurance was present.	Lacked a little height & “bounce”. Lacked dynamics, force & use of

		plié. *Port de bras* a little too controlled. Is preoccupied with the mirror.

ii. Performance Profile

Although the scores from the dancer and the researcher were similar and high, they only fully agree on the points of endurance, strength and proprioception. Only once did the dancer rate herself higher than the tester estimation. This was for power. The tester rated the dancer in general very highly with just lacking a little power, however, the dancer did not rate herself so highly. Interestingly, the points that the dancer rated herself highest on, such as power, endurance and strength were the very qualities that showed to be lacking in the DAFT test.

Table 3 *Performance profile*

Qualities	**Self-estimate**	**Tester-estimate**
Power	9	8
Flexibility	6	10
Endurance	10	10
Coordination	8	10
Strength	9	9
Agility	8	10
Speed	6	10
Balance	8	9
Proprioception	9	9

Exactness	7	10
Musicality	9	10
Turnout	7	10

iii. Ballet DAFT

After warming-up, the dancer began the DAFT (Table 4) with a HR 145, 75.53% of her calculated maximum heart rate. This was slightly high. Koutedakis and Sharp (1999) recommend HR between 50-70% of HR max depending on the goal of the warm-up (p. 168). The HR increased from stages 1 to 2 from 180 bpm to 190 bpm which means she was already working at 98.95% of the MHR. By stage 3 the dancer was working at 100% and achieved a HR of 208 bpm -16 beats over her calculated maximum of 192 bpm, by stage 4. During the test the dancer showed controlled movements in the first two stages and seemed to be able to cover-up her exhaustion well in the first half of the harder stages. After the first two minutes of each of the stages the dancer lost her concentration. During the last stage the dancer had to terminate the test. The dancer stated that she had trouble breathing and that she could have pushed to carry on but, “my muscles just could not do it. I was not able to give maximum; my head said “no”.” At this point the dancers HR was at 208 which showed that she must have felt exhaustion.

Table 4 *Tester observation of the Ballet DAFT*

BORG SCALE 1-10 1 High, 10 Non-existent. Begin HF after warming up: 145

	Stages				
Qualities	**1** **HF 180**	**2** **HF 190**	**3** **HF 192**	**4** **HF 208**	**5** **HF 208**
Sequencing	2	2	1	3	2
Co-ordination	1	1	1	1	2
Exactness	1	2	3	5	8
Travelling distance	1	1	1	2-6	6
Port de bras		1	1	1	2
Jump height			3	6	3
Movement quality	1	1	1	1	1
Arabesque height	1	1	1	5	5
Effort level	10	10	8	6	4
General comments, red in face, etc?	Easy, nice dancing. Concentration slipped after 2 mins. The dancer said it was "easier with the arms"	Concentration slipped after about 2 mins. The dancer seemed a bit behind the music. Dancing looks easy and is nice to watch. The dancer is slightly out of breath. Dancer begins to sweat obviously	The dancer said it was quite hard but "a then end I could have carried on"- also, "my concentration gets lost after 2 minutes". The dancer is out of breath. Foot-work beginning to loose exactness.	Tension in the fingers. But somehow the dancer seems more relaxed. Concentration gets lost, "I lost the music"-"Oh I cannot go on anymore" The dancer is puffing and blowing and clearly out of breath. Feet not pointed, legs not stretched. Dancer seems a bit desperate. Afterwards: "My feet and calves were burning.- Breathing was the hard-est I was dying in this, I have no power."	Seemed easier at the beginning because the music was faster. Very soon the breathing gets very heavy and the arms slow down. The dancer gives up after 1.45 mins Afterwards: "Breathing was hard but I could have pushed to carry on – my muscles just could not do it. I was not able to give maximum, my head said "no"."

The dancer´s scores on experienced exertion (Table 5) show that from the beginning of the test the exertion felt was not particularly comfortable. The second stage (when the *port de bras* were added) was experienced as being easier- which is to be expected from a highly trained dancer with expertly coordinated limbs that assist one another in the movement. However, even the addition of the arm movements was not enough to support the dancer`s movements when shifting from stage three to stage four. Here, the dancer´s perceived exhaustion went from "Somewhat hard" to "Extremely hard" and in the final stage although perceived exhaustion was not rated at "Maximal exertion" but at "extremely hard" the dancer terminated the test.

Table 5 *Borg Scale RPE of how the dancer rated exertion for each DAFT stage*

	Stages				
BORG Scale. Exertion	1	2	3	4	5
6. No exertion at all					
7.Extremely light					
8.					
9. Very Light- (easy walking slowly at comfortable pace)					
10.					
11.Light		X[5]			
12.					
13. Somewhat hard (it´s quite an effort, you feel tired but can continue)	X		X		
14.					
15. Hard (heavy)					
16.					

[5] The dancer remarked that „this stage was easier because the arms were added".

17. Very hard (very strenuous and you are fatigued)					
18.					
19. Extremely Hard (you cannot continue for long at this pace)				X	X
20. Maximal Exertion					

iv. Five day food diary

Calorie intake and nutritional value were calculated using the website www.myfitneesspal.com (Under Armour, 2019) plus literature from McArdle, Katch & Katch (1996) where calorie values for nutrients are stated as; fat per gram = 9.4 kcal, protein per gram = 5.65, carbohydrate per gram = 4.2 (1996, pp. 83-89).

The dancer´s food diary (tables 5-9) showed a very restricted calorie intake of 1186.82 kcal with a low intake of carbohydrate and in relation to this, a somewhat high protein intake and a higher fat intake. In the course of a day, nutrients were divided on average, thus; fat 62.65g, protein 69.68g and carbohydrate 116.06g.

On three days from five a time span of 6 hours and 45 minutes without nutrient intake elapsed. This was between breakfast and lunch. Important vitamins and minerals for dancers, vitamins, C, D and E, vitamin B complex, folic acid, calcium, magnesium and iron (Simmel & Kraft, 2016, S. 38-40) were not optimally consumed. Fruit and vegetables providing vitamin C, calcium from dairy products and various beans and peas, plus iron from meat and beans, peas and lentils, were lacking. Vitamin B complex may be gained from the presented diet through the nuts and fish consumed, however, whether the amounts are enough to fill daily requirements is not clear. Folic acid gained through leafy green vegetables, citrus fruits, beans and pasta was also missing. Water intake was not mentioned.

Table 6 Day one of food diary

Time	**Monday**	**Fat (g)**	**Protein (g)**	**Carbohydrate (g)**	**calories (kcal)**
9.30	Filter coffee with soya milk light 30g protein shake Layenberger	 0.54 0.9	 0.78 25	 0.51 0.9	 9 111
13.00	2 Onigiri with tuna mayo. (about 71g rice raw, 21g tuna) 1 instant miso soup	2.8 1	7.6 3	50.2 3	264 35
16.00	Small coffee with soya milk 2 chocolate Easter eggs about 30g	0.54 9	0.78 2.4	0.51 17.7	9 160.5
19:30	2 x protein bread ham, cheese, 1 boiled egg	14 2 10 6	29 4 10 8	114 0 0 0	316 48 148 77
Total		**46.78**	**57.96**	**183.31**	**1177.5**

Table 7 *Day two of food diary*

Time	**Tuesday**	**Fat (g)**	**Protein (g)**	**Carbohydrate (g)**	**calories (kcal)**

7:45	Coffee with soya milk Yoghurt (3,2fat) blueberries, flax seed	0.54 5 1 4	0.78 6 1 2.1	0.51 6 9 0.1	9 95 71 50.6
14:30	Greek salad : Iceberg lettuce tomato, cucumber, goat cheese olives	13	6	21	222
16:00	Protein bar, Coffee Magnesium effervescent tablet	4 0 0	11 0 0	15 0 0	142 0 11
20:30	1 pumpernickel ham, cheese tomato 1 handful peanuts	0 2 10 0 16	3 4 10 1 8	18 0 0 2 4	90 48 148 12 189
Total		**55.54**	**52.88**	**75.61**	**1087.6 kcal**

Table 8 *Day three of food diary*

Time	**Wednesday**	**Fat (g)**	**Protein (g)**	**Carbohydrate (g)**	**calories (kcal)**
9.30	Filter coffee with soya milk light	0.54	0.78	0.51	9

	30g protein shake Layenberger	 0.9	 25	 0	 111
13.00	200g shirataki noodles Felix sugar free meat sago	2 12	2 10	6 14	12 210
16.00	Coffee Nuts 2 handfulls	0 32	0 16	0 8	0 378
19:30	Miso soup, 1 egg protein bread cream cheese, gherkin	1 6 7 3.6 0	3 8 g 14.5 0.8 0	3 0 57 0.6 0	35 77 158 54 4
Total		**65.04**	**80.08**	**90.01**	**1048**

Table 9 *Day four of food diary*

Time	**Thursday**	**Fat (g)**	**Protein (g)**	**Carbohydrate (g)**	**calories (kcal)**
7:45	Coffee with soya milk Yogurt tahini flaxseed	0.54 5 9 4	0.78 6 3 2.1	0.51 6 6 0.1	9 95 110 50.6
14:30	200g Shirataki rice tuna and herbs	0 0	0 43	2 0	16 180

	50g almonds spicy	27.5	12	3.5	317
16.00	Coffee with cream Magnesium effervescent tablet Sugar free chocolate Approximately 50g	3 0 59.6	0.3 0 11.6	0.3 0 14.4	23.9 11 326.2
20:00	Pumpernickel cream cheese Tomatoes. Olives gherkin	0 3.6 0 4 0	3 0.8 2 0 0	18 0.6 4 1 0	90 54 24 42 4
Total		**116.24**	**84.58**	**56.41**	**1352.7**

Table 10 *Day five of food diary*

Time	**Friday**	**Fat (g)**	**Protein (g)**	**Carbohydrate (g)**	**calories (kcal)**
7:45	Filter coffee with soya milk light 30g protein shake Layenberger	 0.54 0.9	 0.78 25	 0.51 0.9	 9 111
14:30	2 Onigiri with tuna mayo. (about 71g rice raw, 21g tuna) 1 instant miso soup	2,8 1	7.6 3	50.2 3	264 35

16.00	Coffee with cream Easter chocolate about 40g	3 14.4	0.3 3.2	0.3 27.04	29 226.8
19:30	Vietnamese Restaurant: Pho with beef (Soup with coriander soybean rice noodles)	7	33	93 g	590
Total		**29.64**	**72.88**	**174.95**	**1264.8**

v. Nutrition: Dancer´s expected calorie expenditure over 5 days

The dancer´s average daily energy requirements over 5 days are calculated at 3345.60 kcal (Table 11).

Table 11 Expected calorie expenditure over five days

	BMR	Ballet Class	Teaching (ballet)	Yoga	Rehearsal	Text Rehearsal	Calis-thenics	**Total**	**Total**
Time	5 days	7.5 hours	15.5 hours	4.5 hours	4 hours	1 hour	25 minutes	**5 days**	**1 day**
Kcal	7 006.00	1635	5487	999	1464	72	110	**16 773.00**	**3 354.60**

However, after calculating the actual daily energy intake from the five day food diary, a mean daily intake of 1186.82 kcal was calculated, showing a deficit 2167.78 kcal (Table 12 and Figure 1).

Table 12 *Mean daily deficit 2167.78 kcal*

Days	Energy intake	Average energy expenditure per day	Energy deficit
Monday	1177.5	3354.6	2177.1
Tuesday	1087.6	3354.6	2267
Wednesday	1048	3354.6	2306.6
Thursday	1352.7	3354.6	2001.9
Friday	1264.8	3354.6	2089.8

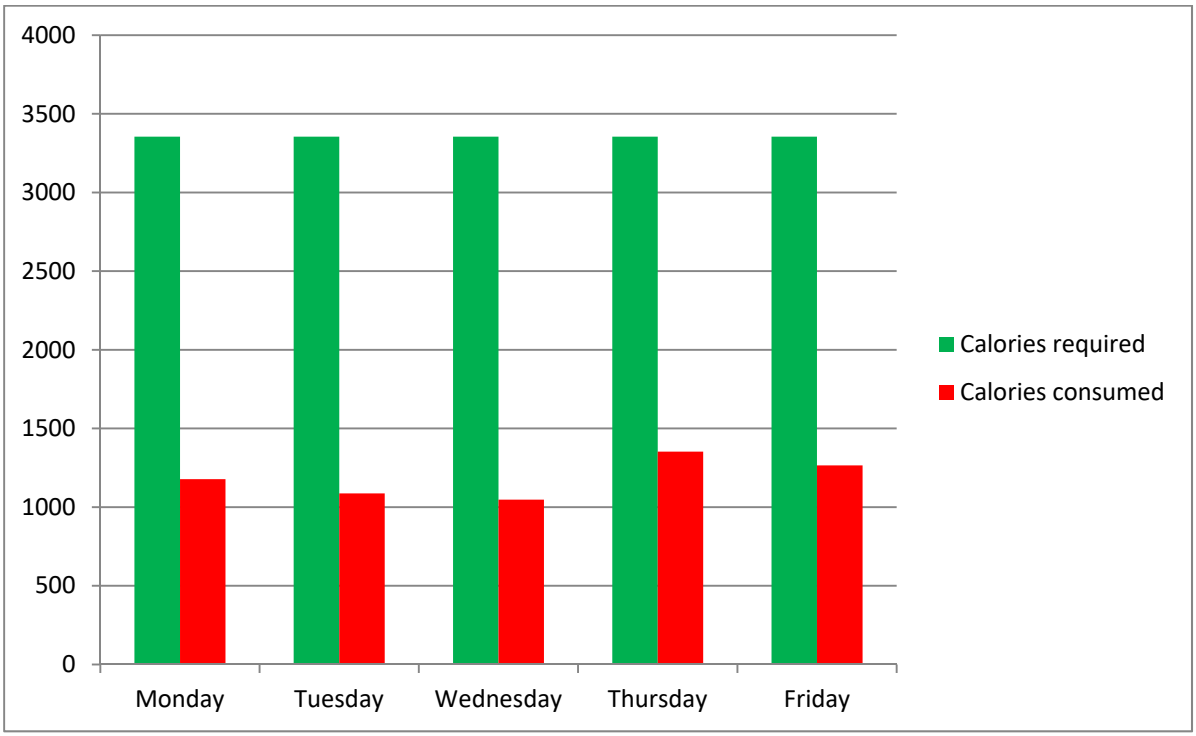

Figure 1 *Average daily deficit 2167.78 kcal*

The optimal division of nutrients for the dancer´s RDA of 3354.6 kcal (Figure 2) was calculated as, fat: 78.51 g (22%), protein: 106.87 g (18%) and carbohydrate: 479.23 g (60%).

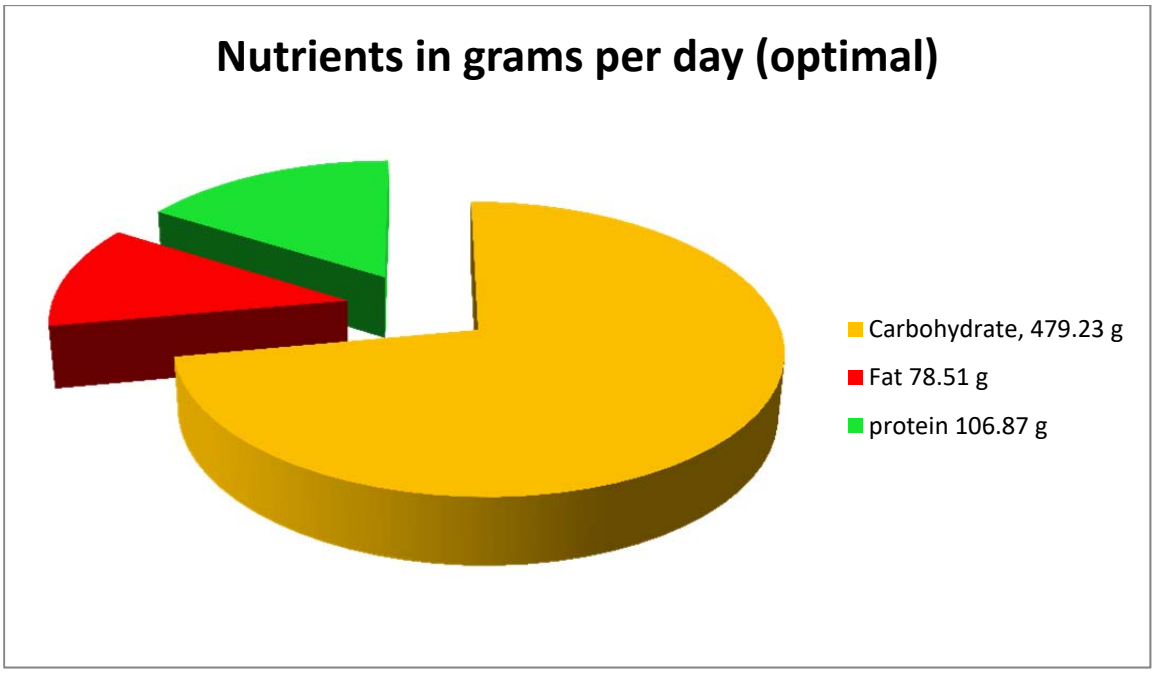

Figure 2 *Optimal average division of nutrients for a 3354.60 kcal intake*

In comparison (Figure 3) the actual division of nutrients -1186.12 kcal fat: 62.65 g, protein: 69.68 g, carbohydrate. 116.06 g.

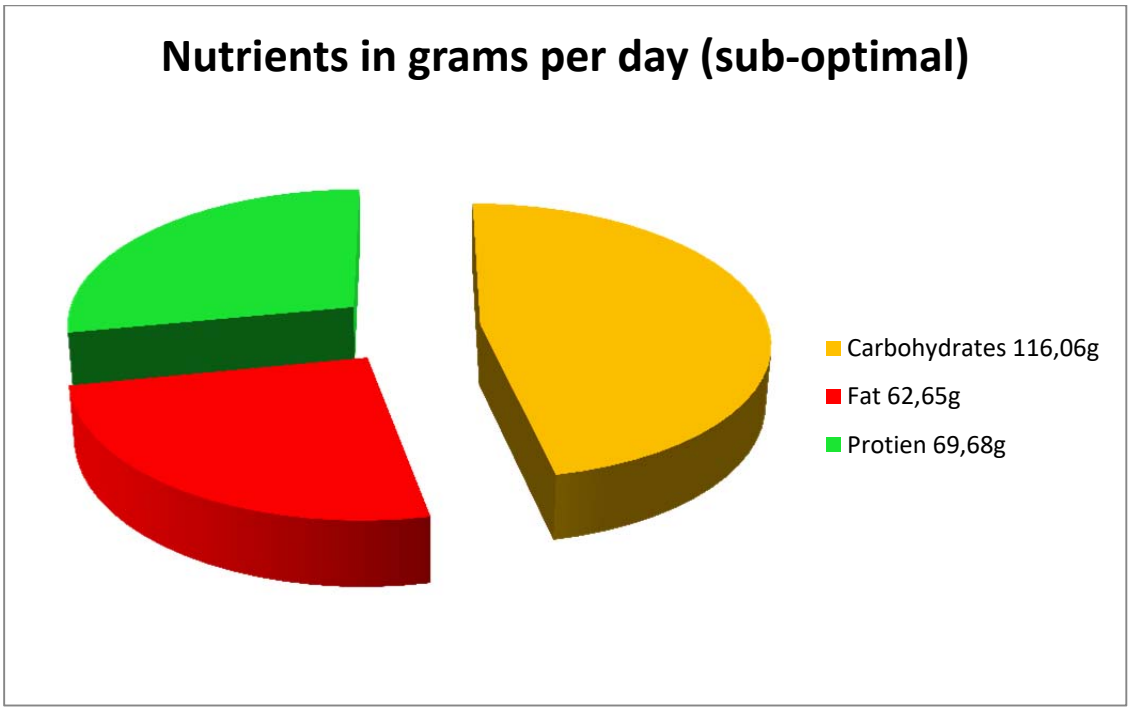

Figure 3 *Sub-optimal division of nutrients for a 1186.12 kcal intake*

Psychology. All tests resulted in low scores and in the interviews the dancer expressed various points that she was unhappy with. This showed that in all three areas of fitness, nutrition psychology interventions would be very beneficial.

i. Personal Interviews

Priority for the dancer is maintaining and improving concentration. The dancer stated that physically she is very fit, being able to run 10 km straight without giving up. She feels that her lack of concentration lets her down and hinders her from showing her full potential. She finds this very frustrating. She expressed being overly occupied about what other people around her in class think of her dancing and that although she likes her body she is not satisfied with her weight and would like to weigh less. She feels that if she could lose weight she would have more and better job chances. She acknowledges the wide spectrum of dance styles required and feels that although her ballet education prepared her for traditional ballet performance, she was not optimally prepared for current demands in her job that reach outside of the classical frame (Appendices C & D)

ii. Body-Esteem Scale

Negative items (4,7,9,10,12,16,17,19) were reversed coded and scores (ratings of 1-5) were averaged across items; higher scores giving more positive body satisfaction. Items were scored thus; Appearance: 4.4, Weight: 1.6, Attribution: 4.3333 (Figure 3).

The dancer rated herself as happy with her appearance and had a positive outlook on how she felt others perceived her body and appearance. The results showed that the dancer has a marked dissatisfaction with her weight, but, according to Mendelson et al. (2001) appearance was the only subscale that consistently predicted self-esteem, therefore one could assume that the dancer´s self-esteem in relationship to her body was generally high. However,

research from Bettle et.al on adolescent ballet dancers (Bettle, Neumärker, Neumärker, & Bettle, 2001) showed that the dancers´ self-esteem was strongly linked to body image and weight. See Appendix E for more information.

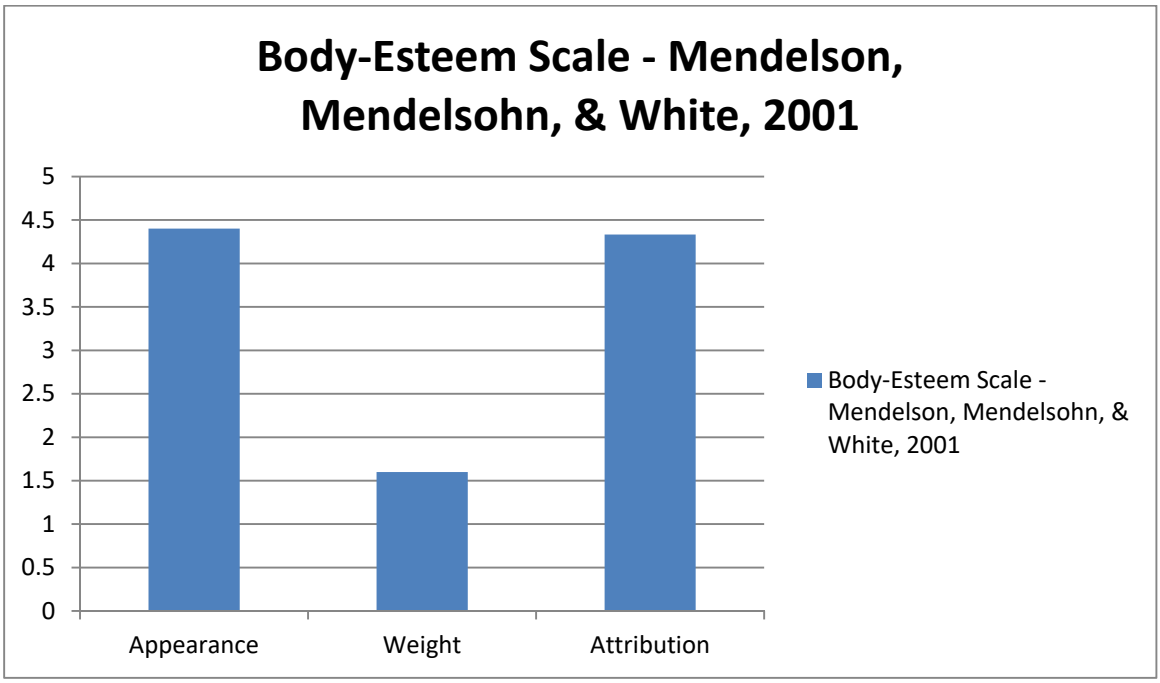

Figure 4 *Body-Esteem Scale showing marked dissatisfaction with weight*

iii. Happiness in the Workplace PERMA

A mean PERMA score of 5.3125 was calculated, giving 53.13% overall well-being. Overall well-being in the workplace was thus calculated:

PERMA= mean (P1,P2,P3,E1,E2,E3,R1,R2,R3,M1,M2,M3,A1,A2,A3,hap)

PERMA = 5.3125 (see Appendix F for more information)

This test (Figure 5) showed overall well-being for happiness in the workplace (rated from 0 = not at all, to, 10 = completely) as being only just over 50%. The subscales Positive Emotion,

Negative Emotion and Relationships showed low scores. Maybe one reason for these low ratings was the feeling of total lack of appreciation (rated 0) from coworkers that the dancer felt. She did not often feel lonely (loneliness rated with 4) and felt that coworkers supported her when needed (6). Engagement, Meaning and Health showed high scores, with Health having by far the highest score. Accomplishment and Happiness scores were both at 50%. Although she felt that her actual work was very purposeful and meaningful and that she had a strong sense of direction she did not feel that what she did at work was particularly valuable and worthwhile. Feeling joyful at work was rated 2 and feeling positive at work, 4. Her happiness was rated at 50%, as was her sense of contentment and the satisfaction with her professional relationships.

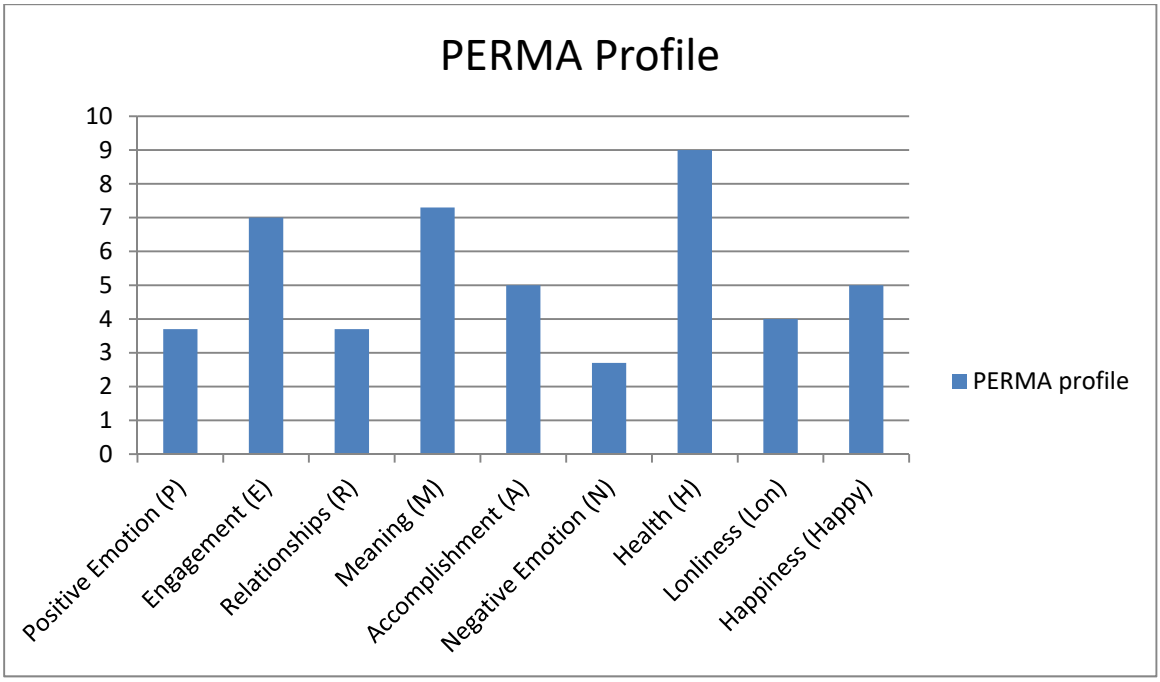

Figure 5 *PERMA Scale showing overall wellbeing in the workplace*

iv. Mindfulness Attention Awareness Scale (MAAS)

Higher scores reflect higher levels of mindfulness (concentration). The dancer´s MAAS score was calculated at 3.6.

MAAS Score = 5+5+3+ 2+3+1+4 +4+1+3+3 +6+2+4+5 = 54, 54÷ 15 = 3.6

This shows on average a 64 % lapse in concentration and awareness. Figure 6 depicts how often the dancer´s concentration wavers in different situations. This test showed that almost always she is so focused on the future goal she wants to achieve that she loses touch with what she is presently doing in order to reach that goal. Furthermore, she somewhat frequently fails to notice feelings of physical tension or discomfort early enough and finds it difficult to focus on what is happening in the present; such as listening to people around her, remembering a new name or being aware of the tasks she is actually doing. Very frequently she is preoccupied with the past or the future (see Appendix G for more details).

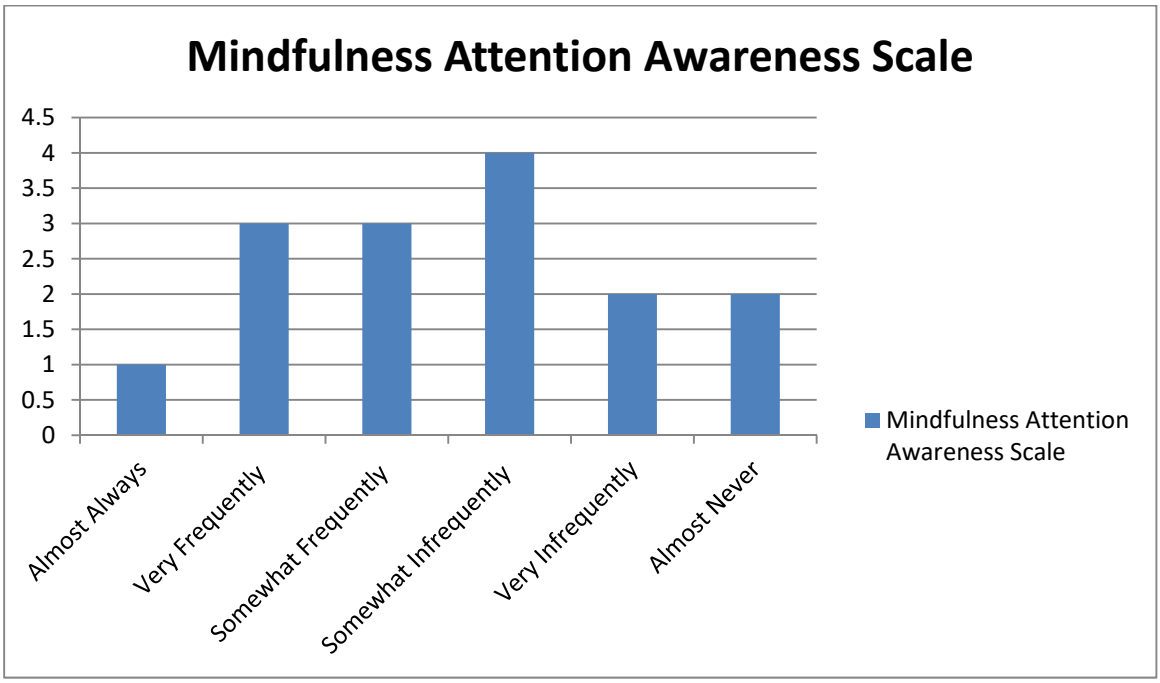

Figure 6 *MAAS: 64 % lapse in concentration and awareness*

Proposed Interventions

Strength and conditioning intervention. The results of the DAFT test showed clearly that a supplementary strength and conditioning program for the dancer is needed. Before the test, after absolving a warm-up, the dancer was found to have a slightly high HR. Reasons for this could have been fatigue from the preceding 90 minute ballet class, or the fact that the dancer was nervous about the test ("I am quite nervous about doing this"). Literature from Baechle and Earle (2008) stated that "Just prior to and at the beginning of an exercise session, a reflex stimulation of the sympathetic nervous system results in an increase in heart rate (p. 123). It is not clear whether this sympathetic reflex could push the dancers HR as high as recorded prior to the DAFT. Other literature and research show that nerves can increase HR Harris (2001), Nordin-Bates (2010) and taking into account that the dancer had previously expressed being overly occupied about what other people think of her dancing the obvious conclusion regarding her raised HR would be nerves. During the test, exertion was high and the dancer fatigued quickly which was indicated by the HR levels recorded. There was a visible lack of stamina and strength in her movements followed by loss of exactness and concentration (which can easily cause injury).

The tester decided that since the metabolism of the dancer was most likely diminished due to extended calorie restriction, plus, alongside of gaining aerobic capacity and strength, one of her goals was to lose weight, that the program should begin slowly and be planned for a period of 10 weeks.

To increase fitness the oxidative capacity must be developed through aerobic training. Ballet performances, in contrast to ballet classes, frequently demand aerobic capabilities. In order to concentrate on technique and artistry and not, as Deborah Bull in Brinson and Dick (2006, p. 65) described as "staving off a total collapse", dancers need regular supplementary aerobic training of at least 20 minutes of continuous training at 70%- 90% of the maximum HR (Wyon, 2005, p. 9). Running, swimming, cycling or a choreographed aerobic training

similar to the Ballet DAFT fitness test (Twitchett, et al., 2011b) can be undertaken.

During the first 5 weeks aerobic endurance will be trained 3 times a week (Table 13). One of the rewards of increased aerobic endurance according to Brinson and Dick ((2006, p. 61), is improved concentration while according to research from Twitchett et.al (2011a) increasing the oxidative capacity (VO_2 max) increases stamina and guards against fatigue induced injuries (p. 35). Soon the dancer should be able to feel the benefits that training brings which will motivate her to continue. Research von Angioi et.al (2012, p. 7) suggested that a 6 week conditioning program for professional contemporary dancers was sufficient to produce marked adaptions both in physical fitness and movement aesthetics.

Hamilton (2009) suggests beginning with three aerobic continuous sessions and progressing to 1 aerobic continuous training combined with 2 interval sessions (pp. 75-76). In accordance with this, after the 5th week when the dancer can absolve three times 30 minutes a week of aerobic training, interval training for the glycolysis system will replace one of the aerobic sessions.

In week 6, training of the phosphocreatine system is introduced. Anaerobic fitness, (the PCr system is needed for short bursts of high power), is best trained using interval training. Koutedakis and Sharp (1999) recommend training the PCr system 3 to 4 times a week with very short work periods of maximal power (1999, pp. 112-113). Shuttle runs for 5-7 seconds with a rest period of 45-60 seconds are recommended. 6 repetitions should form a set and the dancer should progress to 3 sets with a 5-10 minute active rest between sets. The PCr system needs to be trained when the dancer is fresh and the dancer should not be fatigued as a result of this training (Koutedakis & Sharp, 1999).

Contrastingly, interval training for the glycolysis system to support sustained intense strength needs, such as a series of *fouetté* at the end of a variation, should exhaust the dancer and therefore be undertaken at the end of the day and not on consecutive days (Koutedakis & Sharp, 1999, p. 113). Koutedakis and Sharp (1999) recommend using 85%-90% of maximum

effort and beginning with 30 seconds activity followed by 60 seconds active rest. Later the dancer should progress to 30 seconds active rest, working on a 1-1 interval and in time be able to absolve 10 repetitions. This could be done with cycling, skipping, swimming etc.

Table 13 *Supplementary strength and conditioning plan*

TEN WEEK TRAINING PLAN							
Week	**Aerobic Continuous Training Session HR 70%-90% of Max**	**Anaerobic Interval Training, shuttle runs (phosphocreatine system) Maximum effort**		**Anaerobic Interval Training, (glycolysis system) cycling, swimming 85%-90% of max effort**		**Calisthenics Core/Strength Training using 11 Plus App: Kolokythas** (2018)	**Total time**
		One set = 6 reps of 5-7 secs work: 45- 60 secs AR	**AR between sets**	**1 Rep = 30 secs intense activity & 60 secs AR. From week 9 AR is 30 secs. Build up to 10 reps**	**Exercise: Rest Ratio**		
1	3x 20 min					2x 20 min. core/strength	1 hr & 40 mins
2	3x 20 min					2x 20 min. core/strength	1 hr & 40 mins
3	3x 20 min					2x 20 min. core/strength	1 hr & 40 mins
4	3x 25 min					2x 20 min. core/strength	1 hr & 55 mins
5	3x 30 min					2x 20 min. core/strength	2 hrs & 10 mins
6	3x 30 min			3 reps. (total 5 mins)	1:2 (30:60 secs.)	2x 20 min. core/strength	2 hrs & 25 mins
7	2x 30 min	3 x in the week 1 set 60 secs AR	10 mins	6 reps. (total 10 mins)	1:2	2x 20 min. core/strength	2 hrs & 13 mins

		(total 3x 6 mins)					
8	2x 30 min	3x in the week 2 sets 60 secs AR (total 3 x 12 mins)	10 mins	8 reps. (total 12 mins)	1:2	2x 20 min. core/strength	2 hrs & 46 mins
9	2x 30 min	4x in the week 2 sets 45 secs AR (total 4 x 10 mins)	7 mins	9 reps. (total 14 mins)	1:1 (30:30 secs.)	2x 20 min. core/strength	2 hrs & 56 mins
10	2x 30 min	4x in the week 3 sets 60 secs AR (total 4x 18 mins)	5 mins	10 reps (total 18 mins)	1:1	2 x 20 min. core/strength	3 hrs & 16 mins

In order to build muscular strength that will support the aerobic and anaerobic training and help guard against injury, calisthenics training, twice a week for 20 minutes using the *Strength in Motion & Mind app* (Kolokythas, 2018) has been included in the training plan. The dancer can choose from the app which exercises she feels are most needed and progress in difficulty as fitness and strength improve. Being able to choose gives the dancer autonomy which research and literature from Ryan and Deci (1996) & (2000) has shown to be a very important factor of motivation. Calisthenics be done can be used as part of a warm-up (Koutedakis & Sharp, 1999, p. 287) or while waiting around in a rehearsal. Appendix H shows an example of choices plus the advised progressions.

The ten week plan in Table 13 is divided into four parts designed to be fitted around the dancer´s daily schedule. To begin with the dancer will need roughly 1 hr. and 40 minutes a week to complete the schedule, by week 10 she will have progressed to roughly 3 hours and 16 minutes. After week 10, when a good level of aerobic fitness and strength has been

reached her supplementary training can consume less time. 20- 40 mins training sessions three to four times a week at her discretion will be adequate to maintain fitness (Wyon, 2005, p. 5) .It is advised that the dancer continue with her chosen calisthenics program.

Individuals react differently to training. Dancers with predominantly white fibres can move faster, and develop bulkier muscles than those with slow, red fibres who can develop more endurance (Koutedakis & Sharp, 1999, p. 70). In order to gain optimal results careful observation and exchange of feedback between the trainer/dance scientist and the dancer is necessary. For example, through sticking to an exercise regime that results in undesired outcomes such as bulky muscles, the dancer may become frustrated or mistrustful and this could cause termination of the supplementary training. Taking individual needs into account is paramount (Koutedakis & Sharp, 1999, pp. 158-159 & 161) and (Hamilton & New York City Ballet, 2009, pp. 74-77) plus in order to avoid overtraining the progression of training intensity should be carefully monitored (Baechle & Earle, 2008, p. 497).

Nutritional intervention. The dancer stated that she thinks that protein and fat are important in her diet, and her food diary reflected this belief. Although the dancer is only consuming an average of 1186.12 kcal, fat consumption of 62.65 g and protein consumption of 69.68 g per day are acceptable. Lemon (1994) in Koutedakis & Sharp (1999, p. 33) advised that active people have an intake per day of 1-2 g of protein per kg of body weight which means for the dancer, at a weight of 59 kg, 69.68 g of protein is within advised amounts. Hamilton (2009, p. 95) recommends a minimum of 40 g of fat per day while Sousa et al. (2013) state that fat consumption under 20% of overall energy intake can impair dance performance (p. 120). However, the intake of carbohydrate at 116.06 g is very low. Baechle and Earl (2008, p. 211) state that although not all athletes benefit from a high carbohydrate diet, those who train for 90 minutes or longer per day should replenish glycogen through

consuming maximal amounts of carbohydrates. According to figure 7, (Koutedakis & Sharp, 1999, p. 28) which clarifies the recommended intake of carbohydrates to body weight and exercise, the dancer should be consuming at least 450 g – 500 g of carbohydrate, three to four times greater the amount of what she is at present consuming.

Body weight (kg)	Exercise per day (hours)						
	1	2	3	4	5	6	7
40	100	200	300	400	500	600	700
45	150	250	350	450	550	650	750
50	200	300	400	500	600	700	800
55	250	350	450	550	650	750	850
60	300	400	500	600	700	800	900
65	350	450	550	650	750	850	950
70	400	500	600	700	800	900	1000
75	450	550	650	750	850	950	1050
80	500	600	700	800	900	1000	1100

Figure 7 *Recommended daily carbohydrate intake in relation to body weight and exercise volume*

(Koutedakis & Sharp, The Fit and Healthy Dancer, 1999, p. 28)

One of the dancer´s goals is to lose weight and this was a reason why the carbohydrates were reduced - therefore producing an overall limited calorie intake. Literature and research state however, that weight loss through dieting on very restricted calorie intake will reduce the resting metabolism (McArdle, Katch, & Katch, 1996, p. 619) and that diets low in carbohydrate compromise energy reserves and cause glycogen depletion which will hinder the ability to train (McArdle, Katch, & Katch, 1996, p. 61).

To support daily energy expenditure and BMR, the dancer needs to be consuming around 3354.6 kcal per day. Ideally her nutrition would be divided thus: 60 % = 2012.76 kcal from carbs, 22% = 738.02 kcal from fat, 18% = 603,83 kcal from protein (Figure 7).

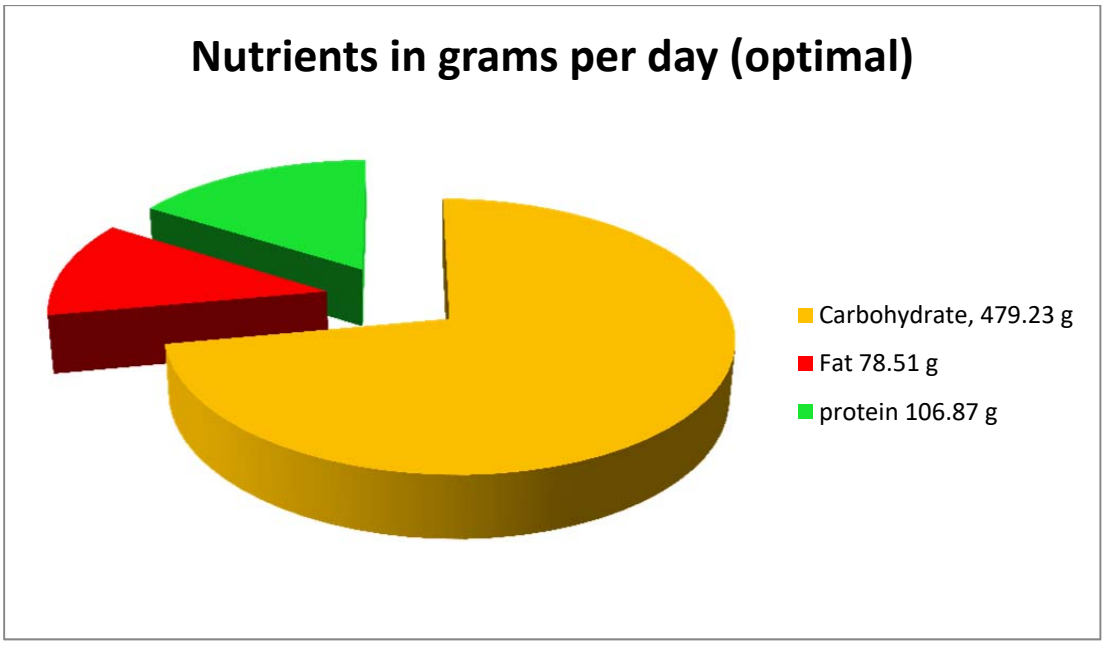

Figure 8 *Optimal average division nutrients in gram for a 3354.60 kcal intake*

However, the dancer has an average deficit of 2167.78 kcal per day. The tables below (14-18) show alterations (in green) on the original five day food diary. This altered plan is advised for losing weight and the alterations include higher carbohydrate, low fat and better quality and higher amounts of vitamins and minerals.

Because the dancer´s metabolism has drastically slowed down the researcher decided not to add too large an amount of calories in the initial stage. It is not clear if adding the deficit all at once would be physically beneficial; however, it is clear that the dancer would most certainly terminate the intervention immediately. The dancer would not be able to cope psychologically with the calorie increase. The needed 2167.78 kcal will be introduced in 3 stages of roughly 700 kcal. This plan is designed so that the dancer can gain strength and boost her metabolism in the initial stage.

To begin with, the altered meal plan yields on average 1842.94 kcal and 256.68 g of carbohydrates a day, reducing the deficit on average to 1511.66 kcal and 193,32 g of carbohydrates. After weeks 3 and 7 the second and third 700 calorie portions containing at least 60% of complex carbohydrates, must be added to the plan; suggestions are shown in

Table 19. From week 4 the dancer hopes to begin to slowly lose weight; 0.5-1 kg a week, a 500-1000 calorie deficit on daily energy expenditure being the recommendations for safe and healthy weight reduction (McArdle, Katch, & Katch, 1996, p. 617). More weight lost within a week is not advisable and this plan should only be carried until the dancer has lost 2- 2.5 kg. A weight loss of more than 2.5 kg in total is not advised by the researcher. By week 10 the dancer will have been able to increase her BMR due to the higher percentage of carbohydrates in her diet and the extra supplementary fitness training.

Timing for nutritional intake is highly important. Long time spans between meals should be avoided. Eating 50-100 g of carbohydrate every two hours to ensure that glycogen stores are preserved and eating a light meal 1-3 hours before exercise will ensure adequate digestion and energy, plus, large meals in the evening should be avoided (Koutedakis & Sharp, 1999). However, late at night, if there has been no possibility to eat a warm meal all day, it is then advisable to cook (Simmel & Kraft, 2016).

Table 14 *Day one altered meal plan for boosting metabolism*

Time	**Monday**	**Fat (g)**	**Protein (g)**	**Carbohydrate (g)**	**calories (kcal)**
08:00	Filter coffee with soya milk light	0.5	0.8	0.5	9.0
	2 x protein bread	20.0	29.0	114.0	316.0
	Butter 10	8.2	0.1	0.1	71.0
	Jam- Apricot 20	0.0	0.1	11.0	45.4
11:30	100 low fat cottage cheese	1.0	11.0	4.0	74.0
13:00	2 Onigiri with tuna mayo, (about 71g rice, raw 21g	2.8	7.6	50.2	264.0

	tuna) 1 x mixed salad: 100g tomato 100g baby spinach 1 large carrot 100g cucumber 1 tbsp olive oil Mango-vanille Joghurt Moevenpick	 0.0 0.0 0.0 0.0 13.5 10.0	 1.4 3.0 1.0 4.0 0.0 2.0	 6.3 4.0 7.0 1.0 0.0 17.0	 35.0 23.0 30.0 16.0 119.0 167.0
16:00	Small coffee with soya milk 1 chocolate Easter egg 15g 1 banana	0.5 4.5 0.0	0.8 1.2 1.0	0.5 8.9 23.0	9.0 80.3 89.0
19:30	1x wholemeal bread roll Lentil soup 1 boiled egg 1x apple	3.0 2.0 6.0 0.0	10.0 8.0 8.0 0.0	24.0 25.0 0.0 14.0	186.0 170.0 77.0 52.0
Total		**72.1**	**89.0**	**310.4**	**1832.7**

Table 15 *Day two altered meal plan for boosting metabolism*

Time	**Tuesday**	**Fat (g)**	**Protein (g)**	**Carbohydrate (g)**	**calories (kcal)**
07:45	Coffee with soya milk Yoghurt (3,2 %fat) Blueberries,	0.5 5.0 1.0	0.8 6.0 1.0	0.5 6.0 9.0	9.0 95.0 71.0

	Flax seed	4.0	2.1	0.1	50.6
11:30	Orange	0.0	1.0	12.0	47.0
13:00	Greek salad : Iceberg lettuce tomato, cucumber, goat cheese olives	13.0	6.0	21.0	222.0
	Butter 15g	12.2	0.2	0.9	107.6
	1x wholemeal bread roll	3.0	10.0	24.0	186.0
	Dates 50g	0.0	0.0	32.0	142.5
16:00	Low 1% fat quark 100	1.5	18.0	6.0	100.5
	Green tea	0.0	0.0	0.0	0.0
	1 banana	0.0	1.0	23.0	89.0
	50 g almonds	14.0	6.0	6.0	160.0
19:30	110 g Grilled turkey breast	0.0	25.0	0.0	180.0
	150 g (cooked) wholegrain rice	4.0	5.0	43.0	227.0
	Landliebe Vanilla pudding	4.0	1.5	7.5	72.5
	Fruit salad 200 g (mix example- apple, grapes, blueberries, orange, apple)	0.0	1.0	26.0	100.0
Total		**62.2**	**84.5**	**217.0**	**1859.7**

Table 16 *Day three altered meal plan for boosting metabolism*

Time	**Wednesday**	**Fat (g)**	**Protein (g)**	**Carbohydrate (g)**	**Calories (kcal)**

08:30	Filter coffee with soya milk light	0.5	0.8	0.5	9.0
	2 x protein bread	14.0	29.0	114.0	316.0
	Butter 15 g	12.2	0.2	0.9	107.6
	Jam 2 tbsp	0.0	0.0	8.0	50.0
11:00	Nuts 1 handful	16.0	8.0	4.0	189.0
13.00	150 g wholemeal pasta (uncooked weight)	1.5	7.5	45.0	235.5
	Parmesan	6.8	9.5	0.8	103.8
	Felix sugar free meat sugo	12.0	10.0	14.0	210.0
16.00	Green tea	0.0	0.0	0.0	0.0
	Fruit salad 200 g (mix example- apple, grapes, blueberries, orange, apple)	0.0	26.0	26.0	100.0
19:30	Potato soup 250 g	4.5	4.5	16.2	184.5
	1 egg	6.0	8.0	0.0	77.0
	1x wholemeal bread roll	3.0	10.0	24.0	186.0
	Cream cheese	3.6	0.8	0.6	54.0
	Gherkin	0.0	0.0	0.0	4.0
Total		**80.0**	**114.2**	**254.0**	**1826.3**

Table 17 *Day four altered meal plan for boosting metabolism*

Time	**Thursday**	**Fat (g)**	**Protein (g)**	**Carbohydrate (g)**	**calories (kcal)**

07:45	Coffee with soya milk	0.5	0.8	0.5	9.0
	Chopped mango 100 g	0.0	0.0	17.0	65.0
	Yogurt	5.0	6.0	6.0	95.0
	Tahini	9.0	3.0	6.0	110.0
	Flaxseed	4.0	2.1	0.1	50.6
11:00	Quinoa Granola Bar Quaker	6.0	2.0	25.0	150.0
13:00	200 g Wholegrain rice (cooked)	1.2	3.6	38.1	178.6
	Tuna and herbs	0.0	43.0	0.0	180.0
	Blueberries,	1.0	1.0	9.0	71.0
16.00	Hot chocolate:				
	250 ml low fat milk,	5.0	10.0	12.5	117.5
	1 tsp sugar	0.0	0.0	10.0	40.0
	1 heaped tsp cocoa powder	2.2	2.0	0.8	36.0
	1 banana	0.0	1.0	23.0	89.0
	Hobnobs	8.0	0.0	22.0	184.0
20:00	Pumpernickel	0.0	3.0	18.0	90.0
	cream cheese	3.6	0.8	0.6	54.0
	Tomatoes.	0.0	2.0	4.0	24.0
	Olive	4.0	0.0	1.0	42.0
	Gherkin	0.0	0.0	0.0	4.0
	Quark 1% low fat 200 g	2.0	24.0	8.0	134.0
	mixed with Dates 50 g	0.0	0.0	32.0	142.5
Total		**51.5**	**104.3**	**233.6**	**1866.2**

Table 18 *Day five altered meal plan for boosting metabolism*

Time	Friday	Fat (g)	Protein (g)	Carbohydrate (g)	calories (kcal)
07:45	Filter coffee with soya milk light	0.5	0.8	0.5	9.0
	2 x Ryvita	0.24	1.7	13.33	68
	1 boiled egg	6.0	8.0	0.0	77.0
11:00	50 g "gittis" Bircher Muesli	0.5	5.0	33.0	185.0
	Yoghurt (3,2 %fat)	5.0	6.0	6.0	95.0
13:00	2 Onigiri with tuna mayo. (about 71 g rice raw, 21 g tuna)	2.8	7.6	50.2	264.0
	Tomato soup 250 ml	2.0	2.0	8.0	174.0
	1 apple	0.0	0.0	14.0	52.0
16.00	Green Tea	0.0	0.0	0.0	0.0
	1 banana	0.0	1.0	23.0	89.0
	Easter chocolate about 40 g	14.4	0.0	27.4	226.8
19:30	Vietnamese Restaurant: Pho with beef (Soup with coriander soybean rice noodles)	7.0	33.0	93.0	590.0
Total		**38.5**	**65.1**	**268.4**	**1829.8**

Table 19 *Extra 700 calorie intake suggestions*

Foods	Fat (g)	Protein (g)	Carbohydrate (g)	calories (kcal)

Suggestion 1:				
Porridge :				
40 g oats	3	5	27	140
200 ml 3,5% fat milk	7	6.8	9.4	130
10 g honey (tsp)	0	0.03	8.2	30.4
raisins 30 g (tbsp)	0.1	0.3	8	30
_____				
Potato salad:				
150 g potato	0	3	25.5	120
Almonds 30 g	14	6	6	160
_____				
Buttermilch	2	6	8	76
1 Orange	0	1	12	47
Total	26.1	28.13	104.1	**733.4**
Suggestion 2:				
Muesli bread roll (Anker)	4.8	6.72	44	257.6
_____				
Kidney bean and sweet corn salad:				
200 g Kidney beans,	2	14	24	190
50 g Sweet corn	0.5	1.5	10.5	44
Dressing:				
herbs with 20 g yoghurt	0.72	0.82	0.78	12.8

(milfina) _____				
1x apple	0	0	14	52
50 g dates	0	1.5	34	145
Total	7.12	24.54	127.28	**701.40**
Suggestion 3: Rice salad:				
Sweet corn 150 g	1.3	4.6	28.5	129
Whole grain rice 150 g (cooked)	0.89	2.68	28.57	133.92
Tuna 75 g	0.53	16.73	0	72
10 ml oil	9.1	0	0	82
_____				
Banana	0	1	23	89
Linessa Muesli bar	4	2	15	102
_____				
Roast sweet potato	1	2	19	93
Total	16.82	29.01	114.07	**700.92**

Confidence and concentration intervention.

Through the interview with the dancer and the results of the various psychological tests that were carried out the researcher came to the conclusion that in addition to the strength and conditioning program and the nutritional plans, the dancer would greatly benefit from

positive self-talk and other empowering psychological tools. She is unhappy with her weight, she could be a lot happier in her work place and her concentration is lacking. Research from Nordin-Bates (2010) showed that the main psychological effect of cognitive anxiety is disruption of concentration. After absolving the DAFT the dancer implied that she was anxious and suffered from a lack of self- confidence when she said, “if I had more strength and endurance, if I was fitter, I would have more confidence and then better concentration”.

There are a number of psychological support models; e.g. the imagery PETLEP model from Holmes and Collins (2001) or the BRAVE method from Goldschmidt (2002). The PETTLEP model proposed by Holmes and Collins in 2001, is a check-list of key elements for imagery scripts designed to help athletes be more effective in their imagery for improving performance. The BRAVE method (Goldschmidt, 2002) is a psychoeducational program designed to help dancers learn and remember basic skills for performance improvement; Breathing, Relaxing (or Releasing), Aligning, Visualizing and Energizing.

The tester decided that working with the literature *Dance psychology for artistic and performance excellence*, from Taylor and Estanol (2015) was best suited to this dancer. This book offers comprehensive advice and cognitive strategies, in language easy to understand, on various psychological difficulties that dancers encounter. For example, using the information in the chapters on confidence and focus, along with the online worksheets provided (Appendices I, J, K, L & M), could help the dancer build a basis for improved self-esteem which could ease anxiety and support better concentration. Practicing positive self-talk and discovering and utilizing personal positive key words, learning to control the breath and implement breathing as a relaxation tool are subjects covered in this book which are necessary for the dancer. Using *The Four Ps of Focus*; Positivity, Process, Present and Progress (Taylor, 2015), the dancer can improve her concentration and learn to focus on things within her control, such as attitude, thoughts, emotions, intensity, effort, technique, hydration and nutrition:

- Positivity: avoiding negative factors, focusing on things which support performance and remembering the saying “What we focus on is what grows”.
- Process: what needs to be done before and during the exercise, class or performance - not what will need to be done later.
- Present: what can be done in the moment.
- Progress: focusing only on personal progress and not on the progress of other dancers`. (pp. 106-107)

The researcher noted that the dancer´s preoccupation with the mirror seems to be simultaneously a cause and a symptom of her lack of self-confidence and concentration. She is mesmerised and at the same time repelled. She “needs” the mirror to correct herself, yet finds that what she sees is “awful” and then in turn she “needs” the mirror more in order to correct that which is so “awful”. Green (1999) wrote that, “the constant focus on an externalized view of the body, as reflected in the mirror, objectifies the dancer's body” turning it into something separate from the self, something to be modified, and corrected (p. 81). Research has shown that working with a mirror can contribute to low body-image scores (Radell, Adame, & Cole, 2004) and that “higher performing dancers feel better about their body image when they do not use the mirror” (Radell, et al., 2011). Radell et al. (2004) also found that *adage* sequences were more negatively affected by use of the mirror than those in the *allegro* part of the class and suggested that:

> It should also be noted that since allegro phrases are quick and lively, there tends to be less time to fully use the mirror as a feedback tool. An adagio phrase, in contrast, is a slow and successive phrase with generally more opportunity for mirror interaction. (2004, p. 81)

The fact that in the class observation the tester first noted the dancer´s preoccupation with the mirror during the *adage* section of the class, supports this suggestion from Radell et al. With this in mind (alongside positive self-talk tools) during slower movements, the dancer is encouraged to consciously avert her gaze from the mirror, or focus on something far ahead of her own mirror image in order to avoid getting irrevocably drawn into her own reflection and thus risk losing her concentration.

Conclusion

The three areas of nutrition, fitness and psychology are intertwined. If the dancer manages to improve her nutritional intake she will have more energy and improved concentration, resulting in a physical status where supplementary training needs less physical and psychological effort which will motivate her to train regularly, which will, in turn, lead to more strength, a better body image and higher self-esteem/confidence. The dancer must be aware that only altering one aspect will not bring desired results. Carrying out a supplementary training scheme without changing nutritional habits may improve confidence for a brief period; however, there will then be a greater risk of over-training and injury. Increasing nutritional intake without adding supplementary training could lead to weight gain due to the metabolism being slowed down through lack of calories (particularly lack of carbohydrates). Weight gain will lead to even more loss of confidence and self-esteem, which could in turn negatively affect concentration; lack of concentration could lead to injury. In order to change nutritional habits and reap the benefits of supplementary training, a holistic approach over a longer time span is required. In this case using psychological tools as suggested by the tester will support the dancer particularly for the duration of the initial transitional phase and aid her in further continuing healthy physical, psychological and nutritional habits helping her to deal with the demands that classical ballet makes.

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Appendices

i. Appendix A, Informed consent form

HUMAN PERFORMANCE EVALUATION

Informed Consent Form

Please complete all the details below. This information is required entirely for laboratory records. Students who require informed consent for research projects are encouraged to design a separate informed consent form with their project supervisor. All forms **must** be available prior to data collection commencing.

Name Astrid Renner D.O.B. 04.03.1991

Address Hirschengasse 17 / 6a 1060 Wien

Telephone No. 0650 6227976

Please read the following statements carefully. Please sign only when you have agreed with the statement and when you have had any relevant questions answered.

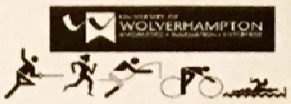
- The full details of the tests have been explained to me. I am clear about what will be involved and I am aware of the purpose of the tests and the potential benefits.
- I am aware that there exists the possibility of certain changes occurring during exercise. They include abnormal blood pressure, fainting, irregular, fast or slow heart rhythm, and in rare instances, heart attack, stroke, or death. Every effort will be made to minimise these risks by evaluation of preliminary information relating to your health and fitness and by observations during testing.
- I am responsible to provide information regarding my health status or previous experiences of unusual feelings with physical effort. I am responsible to report promptly any unusual feelings or discomfort during the exercise test.
- I know that I am not obliged to complete the tests. However, I am obliged to stop the test at any point and for any reason.
- The test results are confidential and will only be communicated to others such as my coach if agreed in advance.
- I have no injury or illness that will affect my ability to successfully complete the tests.

Signature of Participant (over16years) .....

Date 12.04.2019

I hereby declare that I have explained in full the above statements and answered any concerns relevant to this project.

Signature of Tester Jessica Tinder



HUMAN PERFORMANCE EVALUATION

Pre-test Questionnaire

Name Astrid Renner

Date of Birth 04.03.1991 Age 28

As you are to be a participant in this laboratory, would you please answer the following questions truthfully and completely. The purpose of this questionnaire is to ensure that you are in a fit and healthy state to complete the exercise test(s). Your co-operation in this is greatly appreciated. *Please delete where appropriate

ANY INFORMATION CONTAINED HEREIN WILL BE TREATED AS CONFIDENTIAL.

1. How would you describe your present level of activity?
   Sedentary moderately active active highly active*

2. How would you describe your present level of fitness?
   Very unfit moderately fit trained highly trained*

3. How would you consider your present body weight?
   Underweight ideal weight slightly over weight very overweight*

4. Smoking habits:
   Currently a smoker yes/no* A previous smoker yes/no* of 3 + - per day
   If previous smoker, how long since stopping? 3 years
   An occasional smoker yes/no* of .....per day
   A regular smoker yes/no* of .....per day

5. Consumption of alcohol:
   Do you drink alcoholic drinks? yes/no* If *yes* then do you: have the occasional drink? yes/no*
   Have a drink every day? yes/no* Have more than one drink a day? yes/no*

6. Have you had to consult your doctor within the last 6 months? yes/no*
   If *yes*, please give details to the test supervisor

7. Are you presently taking any form of medication? yes/no*
   If *yes*, please give details to the test supervisor

8. Do you suffer, or have you ever suffered, from:
   Asthma? yes/no* Diabetes? yes/no* Bronchitis? yes/no* Epilepsy? yes/no*
   High blood pressure? yes/no*

9. Do you suffer, or have you ever suffered from, any form of heart complaint? yes/no*

10. Is there history of heart disease in your family? yes/no*

11. Do you currently have any form of muscle or joint injury? yes/no*

12. Have you had any cause to suspend your normal training in the last two weeks? yes/no*

13. Is there anything to your knowledge that may prevent you from successfully completing the tests that have been outlined to you? yes/no*

I have read, understood and completed this questionnaire. Any questions I had were answered to my full satisfaction.

Signature of Participant A. Renner Date 12.04.2019

I hereby declare that I have read this form in its entirety and I understand that the questions asked have been answered to my satisfaction.

Signature of Tester Jessica Tuck

iii. Appendix C, Interview questionnaire

Dancer Interview 18.04.19

1. What was your training like?
2. In what way did it prepare you for professional life?
3. In what way did it not prepare you for professional life?
4. What relationship do you have with your body?
5. What do you like about your body?
6. What don't you like about your body?
7. Do you think that ballet is enough to keep you fit for your job?
8. Do you take part in any supplementary training?
9. What are your eating habits?
10. Do you indulge in substance abuse?

iv. Appendix D, Interview

Interview with Dancer

Interviewer in bold typeface

Dancer in regular typeface

Ok- what was your training like?

This four minutes now?

No, your school training?

My education?

Your education.

Good education. Yeh- erm very hard education. With a lot of push. But … good.

I´ll say in German-

Yes, do that.

Translated from [German]Yes it was good, but as a pupil I think we had the feeling that we were never good enough. That´s why in the upper school we did extra Pilates, private ballet classes as well, and this and that so that we could pass the diploma exam. Aber … ja … we all learnt what we needed. I think that the artistry suffered a bit due to all the technique.

And the ermm …. Modern … and such things? Did you do that or not?

Er …. Character, was a very good education, we had really great teachers, we also had Wiesenthal with a very strict teacher … and .. we had modern in the 4th class with a good modern teacher, he did for the 3rd and 4h classes- what was his name? er ..

Alan? No No

No No it wasn't him- what was he … American or English? An American- surely. Oh what was his name? A small man with glasses- I`don't know- never mind- he was really good and

he pushed us to do our own choreography, that we improvised a bit, ja, well as much as one can do with 13 years olds … but … he had us … so … when we choreographed something he had us so encouraged- that it was super what we did and that naturaly helped us of course to choreograph something. And in the upper school the modern was really bad. We had just technique- did just Horten technique, technique, technique, beginners technique of Horten technique.

Hmmhm

And it was all and what we showed in the exam and was for the committee a big disappointment.

Hmmhm

And ah.. we had improvisation in a workshop in the 8th class.

Hmmhm

For one semester- which was about perhaps 10 classes- or around that.

Hmmhm

And from that we did our own choreography but that was optional, we didn't have to do it for the exam but we wanted to do it. A choreography with concept in … what were we .. 2 groups of 5

Hmmhm

Or no, more, we were in a sixe or a seven and another group was a five.

Hmmhm OK and erm … in what way did it prepare you for professional life?

In what way?

Hmm – Do you feel that what you learnt at school was the perfect preparation for working in a company?

Ah!

Or .. could you have had- would you have liked something extra? Or do you think you could have left something out? Or …?

Well … erm in the upper school we went into the corps de ballet, and at that time there was Mr Angosa , which meant there were a lot of large classical pieces, and we had been prepared for these … ja … to stand in the corps de ballet, to do our Swan Lake, to do our Bayadere … lalala .. and to learn all this- and for that the education was good because we managed to do this well and we were all put in immediately – ja- but … as the direction [of the company] changed came naturally suddenly choreographers from around the world, came really in the company and said ,"dear company- everybody will improvise with the set choreography .. and … apart from 2 people in the whole company … everybody was so "Uhhhhggg? What?"

Yes

And I just didn't know where to start with that … I was a looser.

Yes- so there it- in that way it did not prepare you for your professional life.

Yes, exactly.

Ok Umm… What relationship do you have with your body?

Er… right now? Or .. over the years?

So .. do you have a constant relationship with your body? Or is it always changing? How do you …?

Always changing .. yes, always changing. [switches to English] Erm a good one in school

Yeah?

That I was like the …,

That you liked?

Oh in School I was like, my body is what I can show around, (laughs)

OK

That´s why I get jobs, because of my super body!

Ok, ok so- what do you like about your body now?

Mmmm- I think that I got more strength

Hmmhm

Because in school time I was just thin- I had not really muscles

Yeah?

- as you can see on the photos also

Oh I haven´t seen them

And I think now that I have, you can see I have muscles, I have the muscles …

You can see the muscles … Hmmhm

Soooooooo and hur? what else? Muscle ? Hmm … Yeah the rest I´m figuring out

OK -(laughs) so Ok So what don´t you like about your body?

Errr …. The too much weight I think there´s too much body fat here around, lalala

Hmm, hmm?

From having a break, having also a break, I´m having a break and I want to be back in the shape I had in school and

OK

This is my struggle that I don´t be there, but a lot of positive things change from

The break?

School, yeah, no from school,

Oh from school to now?

Hmmm- if I compare myself, so it´s not like I want to go back, caus for there I was for sure weaker than now

OK

I think

Ok ok, Yes? Good. Umm, hahaumm, Do you think that ballet is enough to keep you fit?

Just ballet training is it …

No.

.. is it enough to keep you fit for your job?

No.

Great, OK. Um … Do you take part in any supplementary training?

What´s supplementary? (Participant did not understand the English word)

Supplementary is like extra , like you did at school when you went to the Pilates.

Ahh.

And stuff like that …

Yeah, I do.

Yeah, What do you do?

I go Yoga, I go high intensity training, I …

What do you do in the high intensity training?

Erm- Plank?

Hmmm?

Push –ups? (laughs) Stomach, (now in German)

Yeah?

Thighs- so- lunges

Yeah? Yeah?

10 seconds lunges and then 10 seconds up, or Burdees?

Burpees? Yeah!

Do you do endurance training? Like how long- like running or erm …

Sometimes running but …

How often would you do that?

Yeah ..

Roughly?

Ahh not, I did last summer and last August, September, October I did a lot like 4 times a week ..

OK- and how long?

I did back there, I did … 5 kilometres and switching sometimes to 6 or switching sometimes to 4

Ok so there is in..

Ok so is endurance training a regular part of your workout training nowadays?

Right now?

Right now.

Not.

Ok

No.

Ok-ok

Im…..

Ok- what are your eating habits?

What are my eating habits? Oooh – Protein shake ..

Hmhm?

Now again a lot of salad actually

Hmhm?

Hmmmmmm , fish, meat, curry, shirtaki noodles (giggles)

OK

Hmm (laughs) only roughage … laughs

Ahh, ok, ok

Those are the no calorie noodles- I really like eating them

Oh …

Ahhhhhahah

I don´t know those at all …

Yeah, yeah ..

Ok

Ja mmm, chocolate here and there, nuts,

Nuts? What would you say is good for you?

What´s good, I think I need proteins and fat yeah

Ok , ok ummm… Do you indulge in substance abuse?

(laughs)

Do you smoke, do you, do drugs, do you ..

Ahh!

.. drink alcohol?

(Laughs) Right now, no,

Ok

Hopefully no,

Yeah?

No , no not at all. [German]

Ok, alright, super, thank you.

---

v. Appendix E, Body Esteem Scale

Body Esteem Scale for Adolescents and Adults (Mendelson, Mendelson, & White, 2001)

BES for adolescents and adults has 3 subscales: BE–Appearance (general feelings about appearance), BE–Weight (weight satisfaction), and BE–Attribution (evaluations attributed to others about one's body and appearance). After reverse scoring the appropriate items, participants' responses are averaged across items so that higher numbers indicated more positive body satisfaction.

Directions: For questions indicated how often you agree with the following statements.

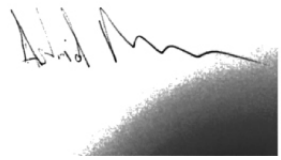
Circle the appropriate number beside each statement.

Never = 1 Seldom = 2 Sometimes = 3 Often = 4 Always = 5

1. I like what I look like in pictures.	1	2	X	4	5
2. Other people consider me good looking.	1	2	3	X	5
3. I am proud of my body.	1	2	X	4	5
4. I am preoccupied with trying to change my body weight.	1	2	3	4	X
5. I think my appearance would help me get a job.	1	2	3	4	X
6. I like what I see when I look in the mirror.	1	2	X	4	5
7. There are lots of things I'd change about my looks if I could.	X	2	3	4	5
8. I am satisfied with my weight.	1	X	3	4	5
9. I wish I looked better.	X	2	3	4	5
10. I really like my weight.		X			
11. I wish I looked like someone else.	X	2	3	4	5
12. People my own age like my looks.	1	2	3	4	X
13. My looks upset me.	X	2	3	4	5
14. I'm as nice looking as most people.	1	X	3	4	5
15. I'm satisfied with how I look.	1	2	3	X	5
16. I feel I weight the right amount for my height.	X	2	3	4	5
17. I feel ashamed of how I look.	X	2	3	4	5
18. My weight makes me unhappy.	1	2	3	4	X
19. Weighing myself depressed me.				X	
20. My looks help me to get dates.	1	2	3	4	X
21. I worry about the way I look.	X	2	3	4	5
22. I think I have a good body.	1	2	3	4	X
23. I look as nice as I'd like to.	1	2	3	X	5

Negative items (4, 7, 9, 10, 12, 16, 17, 19) must be reverse-coded (i.e., 1 = 5, 2 = 4, 3 = 3, 4 = 2, 5 = 1)

14.04.2019

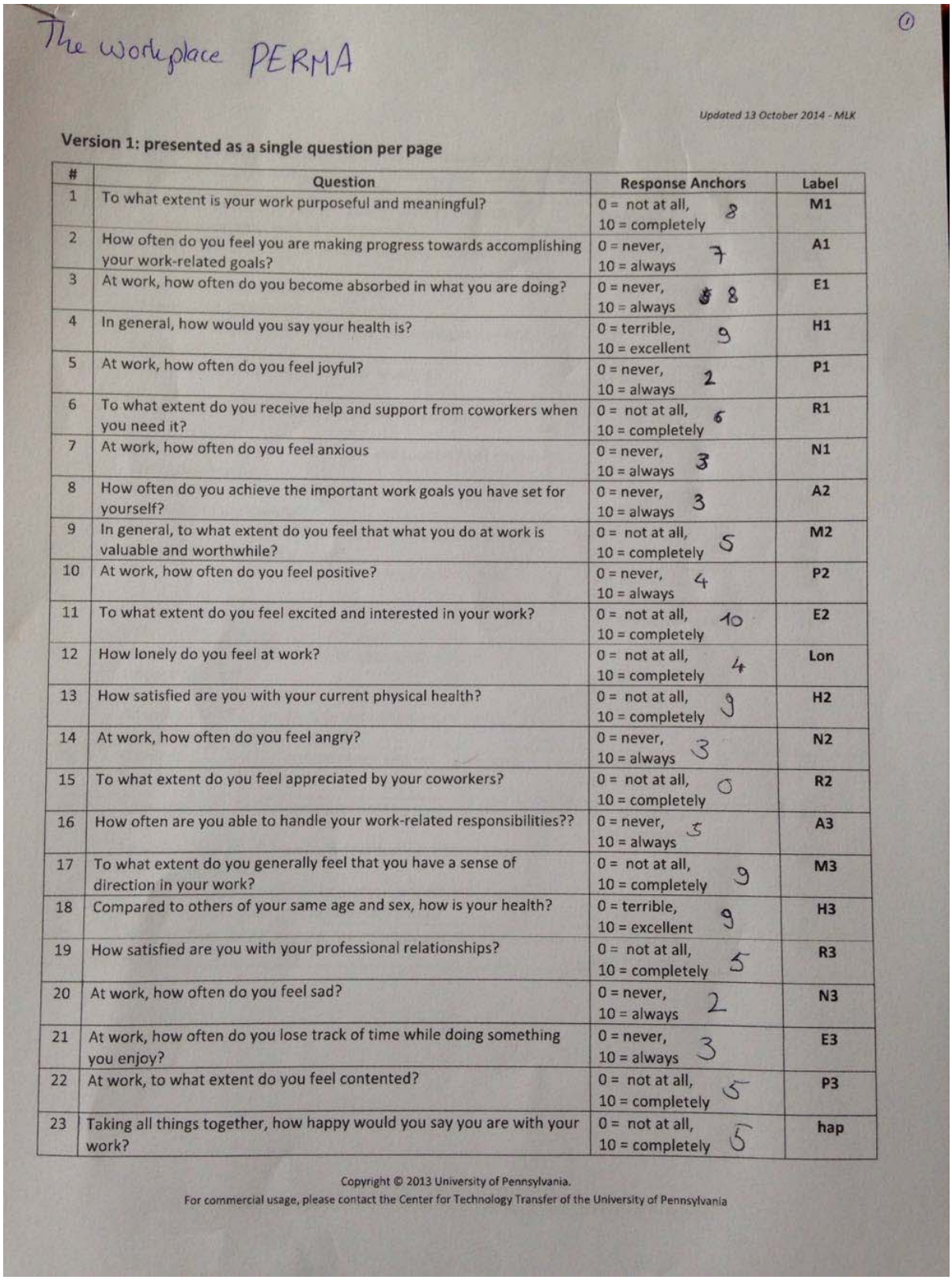


BE–Appearance subscale: Items 1, 3, 6, 7, 9, 10, 12, 13, 14, 16, 19, 20, 21

BE–Weight: Items 4, 8, 10, 15, 17, 19.

BE–Attribution: Items 2, 5, 11, 18

vi. Appendix F, PERMA



The Workplace PERMA

①

Updated 13 October 2014 - MLK

Version 1: presented as a single question per page

#	Question	Response Anchors	Label
1	To what extent is your work purposeful and meaningful?	0 = not at all, 10 = completely 8	M1
2	How often do you feel you are making progress towards accomplishing your work-related goals?	0 = never, 10 = always 7	A1
3	At work, how often do you become absorbed in what you are doing?	0 = never, 10 = always 8	E1
4	In general, how would you say your health is?	0 = terrible, 10 = excellent 9	H1
5	At work, how often do you feel joyful?	0 = never, 10 = always 2	P1
6	To what extent do you receive help and support from coworkers when you need it?	0 = not at all, 10 = completely 6	R1
7	At work, how often do you feel anxious	0 = never, 10 = always 3	N1
8	How often do you achieve the important work goals you have set for yourself?	0 = never, 10 = always 3	A2
9	In general, to what extent do you feel that what you do at work is valuable and worthwhile?	0 = not at all, 10 = completely 5	M2
10	At work, how often do you feel positive?	0 = never, 10 = always 4	P2
11	To what extent do you feel excited and interested in your work?	0 = not at all, 10 = completely 10	E2
12	How lonely do you feel at work?	0 = not at all, 10 = completely 4	Lon
13	How satisfied are you with your current physical health?	0 = not at all, 10 = completely 9	H2
14	At work, how often do you feel angry?	0 = never, 10 = always 3	N2
15	To what extent do you feel appreciated by your coworkers?	0 = not at all, 10 = completely 0	R2
16	How often are you able to handle your work-related responsibilities??	0 = never, 10 = always 5	A3
17	To what extent do you generally feel that you have a sense of direction in your work?	0 = not at all, 10 = completely 9	M3
18	Compared to others of your same age and sex, how is your health?	0 = terrible, 10 = excellent 9	H3
19	How satisfied are you with your professional relationships?	0 = not at all, 10 = completely 5	R3
20	At work, how often do you feel sad?	0 = never, 10 = always 2	N3
21	At work, how often do you lose track of time while doing something you enjoy?	0 = never, 10 = always 3	E3
22	At work, to what extent do you feel contented?	0 = not at all, 10 = completely 5	P3
23	Taking all things together, how happy would you say you are with your work?	0 = not at all, 10 = completely 5	hap

Updated 13 October 2014 - MLK

The Workplace PERMA Profiler
Margaret L. Kern, University of Pennsylvania

Measure Overview

In his 2011 book *Flourish*, Dr. Martin Seligman, Distinguished Professor of Psychology at the University of Pennsylvania and founder of the field of positive psychology, defined 5 pillars of wellbeing, PERMA (positive emotion, engagement, relationships, meaning, accomplishment). We originally developed the PERMA-Profiler to measure these five pillars, along with negative emotion and health. This version was later created, which adjusts the questions to the workplace context.

P and N = Positive and Negative emotions
Emotions are an important part of our well-being. Emotions can range from very negative to very positive, and range from high arousal (e.g., excitement, explosive) to low arousal (e.g., calm, relaxed, sad). For **Positive emotion**, the PERMA-Profiler measures general tendencies toward feeling contentment and joy. For **Negative emotion**, the Profiler measures tendencies toward feeling, sad, anxious, and angry.

E = Engagement
Engagement refers to being absorbed, interested, and involved in one's work, and is a key measure for workplaces today. Very high levels of engagement are known as a state called "flow", in which you are so completely absorbed in an activity that you lose all sense of time.

R = Relationships
Relationships refer to feeling connected, supported, and valued by others in the organization. Having positive relationships with others is an important part of life feeling good and going well. Other people matter!

M = Meaning
Meaning refers to having a sense of purpose in one's work. Meaning provides a sense that your work matters.

A = Accomplishment
Accomplishment can be objective, marked by honors and awards received, but feelings of mastery and achievement is also important. The Profiler measures subjective feelings of accomplishment and staying on top of daily responsibilities. It involves working toward and reaching goals, and feeling able to complete tasks and daily responsibilities.

H = Health
Although not part of the PERMA model itself, physical health and vitality is another important part of well-being. The Profiler measures a subjective sense of health – feeling good and healthy each day.

Use of the Measure

Two versions of the measure are provided below: the first is for presenting the items one screen at a time, or as a full measure as part of a paper questionnaire; the second groups questions together with the same response scales, to reduce the number of pages needed. The questions should be presented in the order noted. The health and negative emotion questions act as filler questions and provide more information; for

briefness, the 16 PERMA questions (3 per PERMA domain plus a single overall question) could be used, but we recommend using the full measure.

The measure is **freely available for noncommercial research and assessment purposes, after registering** (please complete the form at https://docs.google.com/forms/d/1eamBshwjtJyQDsWG72qum8Czi_J2IlZ3Q7r5FE5ojEA/viewform?usp=send_form). In the future, we will have an online portal for taking the measure and receiving results and insights, but at this point, we cannot provide assistance with administering or scoring the measure.

For commercial purposes, please contact the University of Pennsylvania Center for Technology Transfer

Question Administration

The questions should be presented either with radial buttons or on a slider scale, with only the end points labeled. Note that this is an 11-point scale, ranging from 0 to 10.

	Not at all 0	1	2	3	4	5	6	7	8	9	Completely 10
In general, to what extent do you feel contented?	○	○	○	○	○	○	○	○	○	○	○

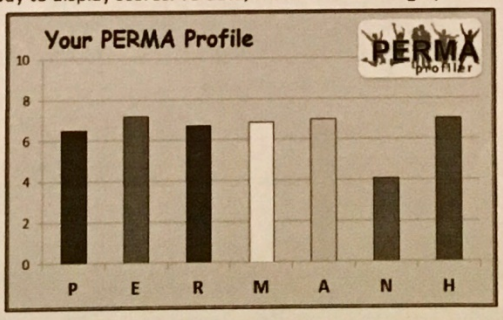
Scoring:

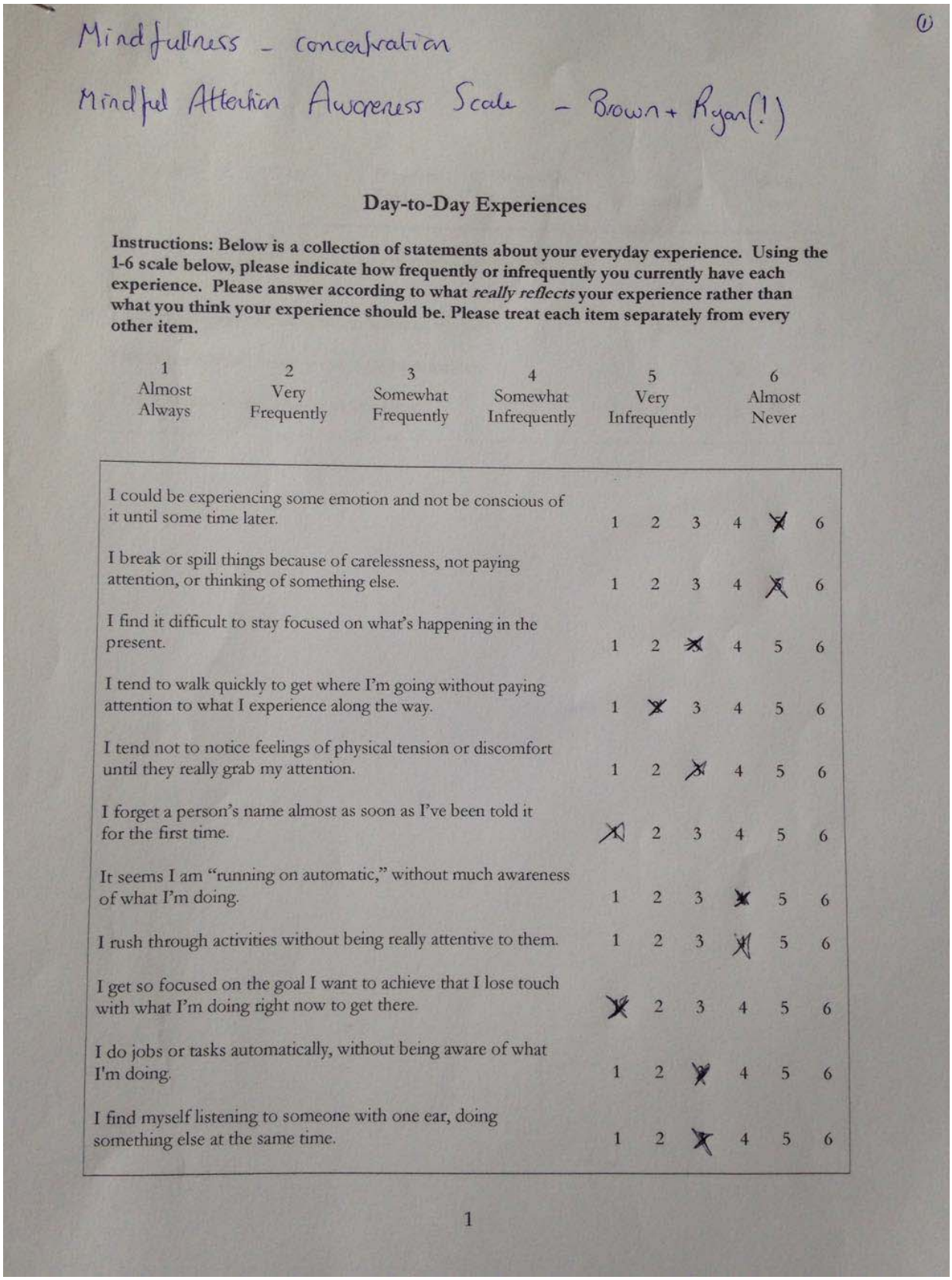
Scores are calculated as the average of the items comprising each factor:

Positive Emotion:	P = mean(P1,P2,P3)
Engagement:	E = mean(E1,E2,E3)
Relationships:	R = mean(R1,R2,R3)
Meaning	M = mean(M1,M2,M3)
Accomplishment	A = mean(A1,A2,A3)
Overall Well-being	PERMA= mean(P1,P2,P3,E1,E2,E3, R1,R2,R3, M1,M2,M3, A1,A2,A3,happy)
Negative Emotion:	N = mean(N1,N2,N3)
Health =	H = mean(h1,h2,h3)
Loneliness	Lon (single item)

Sample Scoring Presentation

We are working on the best way to display scores. To date, we have used bar graphs:





Mindfullness - concentration

Mindful Attention Awareness Scale - Brown + Ryan(!)

①

Day-to-Day Experiences

Instructions: Below is a collection of statements about your everyday experience. Using the 1-6 scale below, please indicate how frequently or infrequently you currently have each experience. Please answer according to what *really reflects* your experience rather than what you think your experience should be. Please treat each item separately from every other item.

1	2	3	4	5	6
Almost Always	Very Frequently	Somewhat Frequently	Somewhat Infrequently	Very Infrequently	Almost Never

I could be experiencing some emotion and not be conscious of it until some time later.	1	2	3	4	X	6
I break or spill things because of carelessness, not paying attention, or thinking of something else.	1	2	3	4	X	6
I find it difficult to stay focused on what's happening in the present.	1	2	X	4	5	6
I tend to walk quickly to get where I'm going without paying attention to what I experience along the way.	1	X	3	4	5	6
I tend not to notice feelings of physical tension or discomfort until they really grab my attention.	1	2	X	4	5	6
I forget a person's name almost as soon as I've been told it for the first time.	X	2	3	4	5	6
It seems I am "running on automatic," without much awareness of what I'm doing.	1	2	3	X	5	6
I rush through activities without being really attentive to them.	1	2	3	X	5	6
I get so focused on the goal I want to achieve that I lose touch with what I'm doing right now to get there.	X	2	3	4	5	6
I do jobs or tasks automatically, without being aware of what I'm doing.	1	2	X	4	5	6
I find myself listening to someone with one ear, doing something else at the same time.	1	2	X	4	5	6

1

Mindfullness concentration

1 Almost Always	2 Very Frequently	3 Somewhat Frequently	4 Somewhat Infrequently	5 Very Infrequently	6 Almost Never

I drive places on 'automatic pilot' and then wonder why I went there.	1	2	3	4	5	X
I find myself preoccupied with the future or the past.	1	X	3	4	5	6
I find myself doing things without paying attention.	1	2	3	X	5	6
I snack without being aware that I'm eating.	1	2	3	4	X	6

mindfullness
answering

MAAS Scoring

To score the scale, simply compute a mean of the 15 items. Higher scores reflect higher levels of dispositional mindfulness.

viii. Appendix H, Supplementary calisthenics plan using 11 plus App (Kolokythas, 2018)

Strength and Conditioning Program using the Strength in Motion & Mind app (Kolokythas, 2018)

Week	Plank on elbows with lifted leg **1 set = 2 reps each side 10-15 secs.**	Plank on hands **1 set = 2 reps each side 10-15 secs.**	Side Plank on knee **1 set = 2 reps each side 10-15 secs.**	Single leg Bridge & Hold (every week holding the positions a few secs. longer) **1 set = 10 reps each side**	Hamstring Raises **1 set = 8-10 reps**	Squats to relevé **1 set = 10 reps**	Sit-up crunches	Side slides **1 set = 8-12 reps each side**	Monster walks with elastic band **1 set = 10 reps of 4 walks in each direction (left, right, backwards, forwards)** **Increase the resistance over the weeks**	Hip Airplane **1 set = 5-10 reps each side**
1.	1 set 10-15 secs	1 set 10-15 secs	With bent underneath leg 1 set 10-15 secs	1 set	1 set	1 set	2x 20	1 set (8)	1 set straight legs	1 set (5)
2.	1 set 10-15 secs	1 set 10-15 secs	With bent underneath leg 1 set 20 secs	1 set	1 set	1 set	2x 20	1 set	1 set straight legs	1 set
3.	1 set 30 secs	1 set 30 secs	With bent underneath leg 1 set 20 secs	1 set	2 sets	1 set Slowly coming down in eccentric phase	3x20	1 set Pause at bottom	1 set straight legs	1 set Take leg higher

4.	1 set 45 secs	1 set 45 secs	With stretched underneath leg 1 set 45 secs	1 set	1 set each side with single leg	1 set Slowly coming down in eccentric phase	3x 20	1 set Pause at bottom	1 set straight legs 1 set bent legs	1 set (10) Take leg higher
5.	1 set Lifting opposites 20 secs	1 set Lifting opposites 20 secs	With stretched underneath leg 1 set 45 secs	2 sets	1 set (15) each side with single leg	1 set Slowly coming down in eccentric phase and pause in squat	3x 30	1 set (12) Pause at bottom	1 set straight legs 1 set bent legs	1 set (10) Take leg higher increase speed
6.	1,5 set Lift opposites 30 secs	1,5 set Lift opposites 30 secs	With stretched underneath leg 1 set 1 min	2 sets	1 set & 1 set (15) each side with single leg	1 set Slowly coming down in eccentric phase and pause in squat	3x 30	1 set (12) Pause at bottom	1 set straight legs 1 set bent legs	1 set (10) with leg same height as before increase speed
7.	2 set 30 secs Lift opposites	2 set 30 secs Lift opposites	With stretched underneath leg and elbow to knee 2 sets	2 sets	2 sets & 1 set (15) each side with single leg	1 set Coming up to *relevé,* Slowly coming down in eccentric phase and pause in squat	3x 40	1 set (12) Pause at bottom	1 set bent legs 1 set straight Legs on demi pointe	1 set (10) Close eyes Low leg
8.	2 sets with side twist 10 secs	2 sets with side twist	With stretched underneath	2 sets	2 sets & 1 set (15)	1 set Coming up to *relevé,*	3x 40	1 set (12) Pause at bottom and	1 set bent legs 1 set straight Legs on demi	1 set (10) Close eyes Increase

		10 secs	leg and elbow to knee 3 sets		each side with single leg	Slowly coming down in eccentric phase and pause in squat		lift trailing leg	pointe	leg height
9.	2 sets with side twist 15 secs	2 sets with side twist 15 secs	With stretched underneath leg and elbow to knee 4 sets	2 sets	1 set & 2 sets (15) each side with single leg	1.5 sets Coming up to *relevé,* Slowly coming down in eccentric phase and pause in squat	3x 50	1 set (12) Pause at bottom and lift trailing leg	1 set straight legs 1 set bent Legs on demi pointe	1 set (10) Close eyes Keep leg height
10.	2 sets with side twist 20 secs	2 sets with side twist 20 secs	With stretched underneath leg and elbow to knee 6 sets	2 sets	1 set & 2 sets (15) each side with single leg	1.5 sets (maybe 2) Coming up to *relevé,* Slowly coming down in eccentric phase and pause in squat	4x 50	1 set (12) Pause at bottom and lift trailing leg	1 set straight legs 1 set bent Legs on demi pointe	1 set (10) Close eyes Keep leg height and increase speed

ix. Appendix I, Worksheet 4.1 *Confidence inventory*

Worksheet 4.1: Confidence Inventory

Instructions

Use the following scale to indicate how often you have each of the following experiences.

---

1 = never, 2 = rarely, 3 = sometimes, 4 = often, 5 = always

_____1. I expect to dance poorly.

_____2. I feel happy and excited about performing.

_____3. I tell people I'm going to dance poorly.

_____4. I focus on my next performance.

_____5. My body language is down and negative.

_____6. I am totally committed to dancing my best.

_____7. I feel like I just want to quit.

_____8. I am confident in my ability to dance well.

_____9. I doubt my ability to perform well.

_____10. I look forward to my next performance.

_____11. I am tentative during the performance.

_____12. My body language is up and positive.

_____13. I worry about my last performance.

_____14. I tell people that I'm going to dance well.

_____15. I feel depressed, angry, or frustrated about performing.

_____16. I expect to dance well.

Scoring: Total your responses to the even-numbered and odd-numbered items separately. Then, subtract your score for the odd-numbered items from your score for the even-numbered items. The

From J. Taylor and E. Estanol, 2015, *Dance psychology for artistic and performance excellence,* (Champaign, IL: Human Kinetics).

result, which will fall between −32 and 32, is your self-confidence score. To understand the implications of your score, review the following descriptors.

32 to 16: High confidence. If you scored in this range, you are a very confident dancer. You almost always think positively and rarely get very nervous. You perform your best under difficult conditions and dance assertively when it really counts. You are also willing to take chances and try new things. You are usually pleased with your dancing, and you love to dance even in poor conditions.

15 to 0: Moderate confidence. If you scored in this range, you are a fairly confident dancer. You usually think positively but can experience doubts when you perform with someone better than you or dance in difficult conditions. You usually perform well, but your dancing can be erratic if you have doubts or get nervous because of the conditions. You generally enjoy dancing but get frustrated at times, particularly if you think you are performing poorly or if conditions are not ideal.

−1 to −16: Low confidence. If you scored in this range, you lack confidence in your dancing. You tend to think negatively when performing and generally expect to do poorly except when dancing with someone who has less ability. Your dancing deteriorates in difficult conditions. Dancing is rarely fun for you, and you sometimes wonder why you do it.

−17 to −32: Minimal confidence. If you scored in this range, you have little or no confidence in your dancing ability. You always think negatively and get nervous when you perform with dancers you think are better than you are. You avoid dancing in difficult conditions and perform poorly when faced with them. You often become angry or depressed when you dance. Every time you dance, you tell yourself that you are going to quit dancing.

From J. Taylor and E. Estanol, 2015, *Dance psychology for artistic and performance excellence,* (Champaign, IL: Human Kinetics).

x. Appendix J, Worksheet 4.2 *Know your self-talk*

Worksheet 4.2: Know Your Self-Talk

Instructions

List the situations in which you tend to use negative self-talk, the causes of your negativity, your common negative thoughts, and positive replacements.

	Hot-button situation	Hot-button cause	Negative self-talk	Positive replacement
1.				
2.				
3.				
4.				

From J. Taylor and E. Estanol, 2015, *Dance psychology for artistic and performance excellence,* (Champaign, IL: Human Kinetics).

xi. Appendix K, Worksheet 6.1 *Focus inventory*

Worksheet 6.1: Focus Inventory

Instructions

Use the following scale to indicate how often you have each of the following experiences before or during a performance.

---

1 = never, 2 = rarely, 3 = sometimes, 4 = often, 5 = always

_____1. Being unable to block out offstage distractions while performing

_____2. Being unable to block out internal activity before or during a performance

_____3. Being unable to focus on pre-performance preparation because of external distractions

_____4. Focusing on over-intensity rather than on pre-performance preparation

_____5. Being anxious, distracted, or confused because of pre-performance activity

_____6. Forgetting choreography because of thinking about other things

_____7. Forgetting choreography during rehearsal because of spectators

_____8. Worrying before or during a performance about how you will dance

_____9. Focusing on other dancers in class rather than on technical instruction

_____10. Thinking about the performance outcome rather than the process

_____11. Getting distracted by external cues (e.g., audience, offstage activity) while you are onstage

_____12. Getting distracted by irrelevant thoughts while onstage

Scoring: Total your responses to the even-numbered and odd-numbered items separately. Then, subtract your score for the odd-numbered items from your score for the even-numbered items. The result, which will fall between −24 and 24, is your concentration score. To understand the implications of your score, review the following descriptors.

From J. Taylor and E. Estanol, 2015, *Dance psychology for artistic and performance excellence,* (Champaign, IL: Human Kinetics).

24 to 8: Internal focus. You are sensitive to internal distractions. You tend to think too much about negative or irrelevant things. You are very aware of your emotions and often let them decide how you perform. You are acutely conscious of your body's responses and notice changes in your intensity. For you to perform effectively, you must take steps to block out internal distractions and focus outward.

7 to −8: Moderate focus. You are not overly sensitive to either internal or external cues. You are usually able to maintain good focus, and if you become distracted you can regain your concentration.

−9 to −24: External focus. You are sensitive to environmental distractions. You are usually very aware of your surroundings, seeing and hearing most of what occurs around you. These external distractions often keep you from focusing on the task at hand in class, rehearsal, or a performance. They also tend to cause over-intensity. For you to perform effectively, you must take steps to block out external distractions and focus inward.

From J. Taylor and E. Estanol, 2015, *Dance psychology for artistic and performance excellence,* (Champaign, IL: Human Kinetics).

xii. Appendix L, Worksheet 6.2 *Performance relevant versus performance irrelevant cues*

Worksheet 6.2: Performance-Relevant Versus Performance-Irrelevant Cues

Instructions

For each category of external or internal cues, write down specific cues that are performance relevant and performance irrelevant.

	External and internal cues	
	Performance-relevant	**Performance-irrelevant**
Class		
Physical space		
People		
Thoughts		
Emotions		
Intensity		
Rehearsal		
Physical space		
People		
Thoughts		
Emotions		
Intensity		
Performance		
Physical space		
People		
Thoughts		

From J. Taylor and E. Estanol, 2015, *Dance psychology for artistic and performance excellence,* (Champaign, IL: Human Kinetics).

Emotions

Intensity

From J. Taylor and E. Estanol, 2015, *Dance psychology for artistic and performance excellence,* (Champaign, IL: Human Kinetics).

xiii. Appendix M, Worksheet 6.3 *Performance relevant key words*

Worksheet 6.3: Performance-Relevant Key Words

Instructions

In the left column, write common technical or artistic instructions. In the right column, write key words for focusing on each instruction.

Instruction	Key Words
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	

From J. Taylor and E. Estanol, 2015, *Dance psychology for artistic and performance excellence,* (Champaign, IL: Human Kinetics).