

Budapest Contemporary Dance Academy

THESIS

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Budapest Contemporary Dance Academy
Dance Teacher MA

Dance Long and Healthy
The causes of and prevention of dance
related injuries

THESIS

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Table of Contents

Abbreviations	3
I. Introduction	4
II. Context – A Dancer’s Day	6
1, The daily classes	6
2, The rehearsals	8
3, The performances	10
III. Causes of Dance Related Injuries	12
1, Incorrect Action	13
2, Overburden and partial overburden	13
3, Preparation and warm up work out are not done enough	14
4, Psychological, emotional and other factors	15
5, Improper diet, bad living habits	15
6, Other factors	15
IV. Prevention from Dance Related Injuries	16
1, Stay away from incorrect action	16
2, Stay Away from Excessive Work	17
3, A thorough work out before and after	18
4, Mental awareness	22
5, Diet and maintaining balance	27
6, Others	31
V. Recovery from Non-critical Injuries	33
1, Therapy	33
2, Training tricks	34
3, Diet	35
4, Positive attitude	37
5, Meditation	39
VI. Conclusion	42
Reference	46
Appendix: the survivors’ talk	47

Abbreviations

HNB - Dutch National Ballet

NBC - The National Ballet of Canada

NDT - Netherlands Dans Theater

I. Introduction

Dance is an art that expresses feelings through the body language. Dancers dance, in class, rehearsals, performance. It usually happened when the body is hot and flowing. Dancers must undergo long-term training in order to achieve the ability to control the body as they want. In the process of pursuing the perfection of dance movement, dancers strive to maximize the dance skills and the style of the dance. The body damage caused by the dance often comes along with it. As a dancer, we will experience some different levels of pain in every class, rehearsals, and performance. Simply because of the high physical demands that dance puts on us. Though pain is unpleasant, it values our dance training and performance. As dancers push them physically to perform at the highest level, pain give them valuable information about the dance training efforts, offering a powerful and persistent physical warning to the body. It's up to dancers whether they approach pain as a friend that helps them pursue their goals or as an enemy that keep them from realizing their dream.

Dancers face high risk of injuries during short professional career. There are many dancers who suffered many injuries during their career. Dancers have what we would call, occupational hazards: being dropped, running off stage and tripping on wires, hitting a leg on a lighting boom, or being hit during a particularly crowded performance!

Some may have been told that this is all part of the game, as there is “no pain, no gain...” This sentence is like a motto that expresses a bright future. Almost all dancers experienced pain and injury during practice, and the psychology and physiology were complicated at the time.

Unfortunately, many athletes, dancers included, have such words hardwired in their brain and it can lead to unhealthy attitudes and dangerous practices. Among this group, some had to cut short the dance career due to the injuries. I am one

example. I had been in HNB for eleven years at a point and was trying to learn as much as I could that was physically possible. My workload suddenly multiplied, and my body didn't accept it. After none stop ballet classes, rehearsals and performances, my Achilles' tendon partially ruptured. The result was very bad. In fact, I accepted the fact that I might not be able to deliver 100% again and became a dance teacher.

However, there are many successful dancers who had hardly any major injuries. One of the examples, NBC's prima ballet dancer - Greta Hodgkinson says: "I've been so very fortunate to not have had a major injury in my career. I am always very careful about everything with my dance career."¹ Hodgkinson might be the lucky one in dance. She shows us the planning and execution are very important. Thence the pain can't be avoided, but fully understanding our physical condition, emotions, diet, proper training, reasonable distribution of work and control over fatigue can greatly help us to dance longer and healthier.

A dancer who survives and does well is one who has a clear and quite objective awareness of the scope, magnitude and quality talent. As a former ballet dancer and a ballet teacher now, I endeavor to look into the potential causes of dance related injuries and provide preventive measures against them.

¹ Greta Hodgkinson, NBC's prima ballet dancer.
<https://www.gramilano.com/2016/02/dance-injuries-from-the-ballet-dancers-point-of-view-top-stars-share-their-experiences/>. Access date: 30-05-2019.

II. Context – A Dancer’s Day

Dancers face risk of injuries during their day to day work. This section examines a dancer’s typical day with the objective to identify those activities where injuries can happen.

1, The daily classes

For all dancers, the ballet class is always important. In a day, ballet classes are always in the morning. They take on the warm-up, so that the dancer's limbs reach the best state, and then continue to the rehearsal or performance. All kind dances have a complete training system. These boring rigorous and regulate exercises keep the dancers in good condition while warmed and movable. Also, it is very important to prevent the dancers from being injured.

To be a dancer, we are committed to the ritual of the daily class for the duration. A fully-grown student – two classes a day in addition to other activities. A professional in rehearsal – at least one class a day or a thorough self-conducted workout of at least an hour in length before rehearsal. From the Floor, to the Barre, and then Center, into Allegro, eventually open every part of the body. Novelists, painters and poets can take off for a few months and even come back to work refreshed. A week’s rest after a long, intensive spell of work never hurt any dancer. From then on, each day without dancing reduces the capability to be a dancer.

“The dancer spend his life learning, because he finds the process of dance to be, like life, continually in process. That is, the effort of controlling the body is not learned and then ignored as something safely learned, but must go on, as breathing does, renewing daily the old experiences and daily finding new ones. Each new movement experience, engendered by a previous one, or an initial impression of the action of the body upon time, must be discovered, felt and made

meaningful to its fullest in order to enrich the dance memory.”² This is a classic example of the way that most of us learn and developing from each other. Thus, a regular, persistent daily training is necessary.

If you are well but don't “feel” like taking class – go. You don't have a choice. If you feel uncomfortable or unslept – go. Go and work within your limits. Completing ballet class can minimize the chance of injury.

On occasion, I had an eerie experience. It was a performance day, I felt tired and lazy from previous night's performance, plus I had small injuries in several places. However, I still forced myself to go to the ballet class. I worked for twenty minutes and decided to give up but stayed partly because the two hours were part of my paid employment or because I simply thought I should. After forty-five minutes I felt enough, ready to leave but did not make it to the door. “I will do a few turns and Allegros and then leave.” I was very much concentrated. Fifteen minutes later I realized I was dancing up a storm and in touch with my body in a way I hadn't felt for weeks and I couldn't figure out how I got here. The weird thing is, fatigue and even depression often bring us to some profound energy source. The performance on that evening was successful. Although I don't think the complete ballet class was the only reason that made my performance successful. However, maybe it made me avoid some minor damage to grow.

But, then, there are those signals: “No! Don't dance today!” It may be actual pain, injury, a cold, a feeling or an unreasonable discomfort. A day missed is certainly not the end of the world, but days missed are huge mistakes. Nobody should be a dancer who doesn't need to dance sustained every day.

² Sorrell, Walterl, (1966), “Dance Has Many Faces”, USA: Columbia University Press, p. 220-252

2, The rehearsals

Rehearsals occupy most of the time of the dancers. Some of the juiciest and richest times of my dance life have been in the rehearsals. There is a question about how much energy should a dancer put in rehearsal. Some dancers need an audience to turn up that full head of energy. I imagine there are some very good performers who work precisely on this assumption. However, I lean toward full-out rehearsing and bet that most choreographers do too. They want to see what it will really look like. To the dancer entering the profession, a cool and low energy rehearsal style is probably a risky choice.

The basic talent of a performer is simply to show the movements as given by the choreographer. Many teachers are patient and slow down for the slow learner. But there are too many good dancers out there looking for work, and there is always too much to do and learn in too little time. We often heard those voices in the rehearsals: “Oops, I just made a mistake!”, “Oh, I am so slow!”, “Why is this so difficult?”, “What awful choreography!”, “I am going to look terrible by doing that!”, etc. Being critical of what you give will make you a slow and bad learner. Dancers spend far more time rehearsing in the studio than being on the stage. How many times in class or studio have we made mistakes? Knowing that you are wrong when you are wrong is already an improvement. Many times, irritability and anxiety can cause a series of mistakes. Slow learning and uncertain learning are ideal for getting coordination and sustaining ability. My personal experience, rehearsal is always about being corrected, in the process of modification, waiting, then continue, and move forward.

The other role we often play in rehearsal is the Watcher. No matter who is rehearsing, there will always be eyes watching. Usually the Watcher focus on those bright, quick, and shine one who know everything and show correctly. Observation and analysis are very important, especially for choreographers, and even some dancers in the direction of integrated instruction. To be honest, I envy

such dancers. Although, I do have a similar talent. Whenever I see another dancer doing something amazing and beautiful, I will try to learn behind that person. This kind of reaction might make choreographers notice me, and I also have the chance to be the person who makes exquisite moves.

A dance combination includes a dozen movements. A dance clip can include hundreds of movements. For a full-length ballet, there may be thousands or even millions of movements. Remembering the dance movements is not just about the attitude of the profession. It's also the responsibility of the dancer's body. Many of my friends got surprised when they watched the full Swan Lake. They ask: How do dancers remember that many dance steps? My answer would be: Because we have already practiced dance movements like eating, The familiarity and regularity make it impossible to miss. From ballet class to rehearsal to performance, we practice over and over and over. All preparations do not mean perfection. A little mistake can cause injury or even serious accidents. Therefore, ballet classes and rehearsals are two stages where dancers are easily injured.

What do you do in rehearsal when you are “doing nothing”, as a rehabilitation dancer, and eager to regain reuse. You watch and you learn, and you digest. My own example, I once watched without a role with nothing or near nothing to do in Juanjo Arques' choreography – Consequence. (Dutch National Ballet, performed in 2012) One day someone was off, and immediately I not only let it known that I was there and available but that I knew the material. I stepped right into the soloist role and the performance went well.

In rehearsals, whether it's watching, practicing behind, or performing, we never know what will happen in the next second. Rehearsal is the continuation of the ballet class, combing all the good and bad possibilities to the only way – the Performance.

3, The performances

The million numbers of Plies, Tendus, the classes, the rehearsals, the injuries, the sacrifices, all point to performance. Of course, the stage should be the ultimate goal of all dancers.

Many performers will have already structured their arrangement before and after the show. I will describe my own ritual as an example.

- If a performance is at 20:00, I have to finish eating no later than 18:00. I require a rest or nap after eating.
- By 18:30, I am in the dressing room or at the makeup table, aiming to be made up and changed into practice clothes.
- Around 18:45, I start my intense Pilates work out with my headphone and music for 15 minutes. From this moment on, I'd like just to be myself. I don't really like to receive any other noises, such as suggestions and corrections.
- By 19:00, I begin a "full" ballet class warm up. I do most everything very deeply and fully but with fewer repetitions. I generally pick a spot upstage corner to start, or the same spot in the studio. That makes me feel closer to the audience.
- By 19:30, I am ready to go through specific phrases that have been troubling me. If I work on them now, there is less chance that I will worry about them in a performance.
- Around 19:40, I am back in the dressing room and refreshing the makeup.
- I get into costume and go to the back stage by 19:45 or 19:50. From this moment on until curtain, I never stop moving, twisting and flexing feet, stretching, Releves, small Allegros, etc. Of course, there are many kisses and "ToiToiToi"³ to or from colleagues. Moving stops me from being

³ ToiToiToi – an expression used in the performing arts to wish an artist success in an imminent performance.

nervous. I also learned from Pilates that continuously deep breathing helps keep me calm.

- At 20:00, performance starts.
- I will replenish energy properly during the intermission. For example, eating a banana or nuts, and drinking a lot of water.

I absolutely do all I consider necessary to do a fully expressive and personally authoritative performance. Anything less is not only inviting your own self-disapproval but also physical injury.

Injury during the performance

The professional sense of responsibility makes most of us continue in spite of injury and sometimes in spite of serious injury. The complexity is complicated by the body's response to injury during performance. With prolonged intense physical activity, we produce endorphins, which are chemically almost identical with morphine. Thus, in performance, our bloodstream carries a painkiller all over the body. An injury world also releases the panic hormone, adrenaline. This also blocks awareness of pain. Thus, during performance we often are unaware of injury.

III. Causes of Dance Related Injuries

This section examines, from the context of a dancer's daily work as described in the previous section, the potential causes of dance related injuries.

“There are three steps you have to complete to become a professional dancer: learn to dance, learn to perform, and learn how to cope with injuries.”⁴, according to Mikko Nissinen, the artistic director of the Boston Ballet. This is a confirmation how frequent dancers get injured in their professional life. Below discusses what cause the dance related injuries.

- Distinguishing injury pain

Injury pain can affect our physical ability to train and perform. It can also hurt our psychologically, like in motivation and confidence, increase anxiety, and cause worry and frustration.

Injury pains can be felt in two ways. First, for dancers, common injuries are around the feet, ankles, lower legs, knees, and hips. These pains are usually not acute at first, thus they are often ignored and may not even be perceived as injury pain. Second, we may experience pain caused by an injury due to an acute incident, such as a fall or twist. This type of injury pain is unmistakable: sudden, intense and localized.

In my 20 years of dance training, I always competed with pains. I believe that many dancers have same issues as me, have suffered more from the accumulation of minor injuries. During my work time at the Dutch National Ballet, the pain in my left thumb was always a problem. Three years ago, I broke my Achilles tendon when I was in a stage rehearsal, and it was a very simple step. When it

⁴ Mikko Nissinen, the artistic director of the Boston Ballet.

<https://www.balletconnections.com/ballet-quotes/>. Access date: 30-05-2019.

happened, most dancers recognized “done something wrong”, because this type of pain is usually so uncomfortable and intense that it can’t be ignored. Therefore, if we experience small pain that does not become better in a few days. We must get a medical treatment so that the injury does not become a chronic problem that limits our dancing in the long term.

The causes

The basic skills of dance and the design of dance movements are: if the physical conditions fully meet the requirements and the strict technical requirements are strictly enforced, then the damage will not exist. However, the perfect physical conditions that meet the requirements are rare, and the mastery of technical movements is a long and gradual process of correction, so damage often occurs.

1, Incorrect Action

In jumps, the correct action requires landing without a sound, and the toes, soles, and heels are laid in order. Often wrong actions can cause disasters.

One of my former colleagues had a very serious accident. Because of his Achilles tendon is relatively short, he didn't control the landing well when he was making a big jump, which caused the disaster - Achilles tendon rupture. Of course, this is related to his high-intensity training. (Full interview please check Appendix: the survivors’ talk - Bruno Da Rocha Pereira.)

2, Overburden and partial overburden

Overburden and partial overburden happens normally in a training session, as we over concentrate on the partial body movement training, causing excessive muscle load in this area; or between the two classes, where the movements forms are the

same or similar, causing the same muscle with repetitive force. These increase the burden and causing damage.

Technical complexity required for success in dance may predispose dancers to injury. for example, "turn out" - externally rotating the hips and lower extremities to place the feet as close as possible to an ideal angle of 180 with each other - is a fundamental component of ballet. But many dancers force this position beyond their normal limits, a practice that may result in conditions such as foot pronation, low back pain associated with anterior pelvic tilt, and pain and injury in joints of the lower extremity. Younger dancers or dancers who are less well trained are especially susceptible because they strive for a technical performance level for which their bodies may not be suited or properly instructed.

Most dancers are like athletes who work 6 days a week for 8 hours a day, constantly pushing their body to the limit. Breaking through the limits, might cause the problems. Like my friend – former dancer - Anu Viheriaranta, when she faced weaknesses, she continued practicing. Thus, from small pain to muscle inflammation, she became injured with two severe back injuries, sprained ankles, calf, hamstring, neck, among others. It is through the multiple injuries, that she has been fighting and dancing for more than twenty years. (Full interview please check Appendix: the survivors' talk - Anu Viheriaranta.)

3, Preparation and warm up work out are not done enough

Before any moving actions, you should do adequate preparation activities. Any warm-up is better than nothing. At present, most people have accepted this view, but are not clear what kind of warm-up should be done for each specific activity.

4, Psychological, emotional and other factors

During high-intensity training, fatigue is difficult to eliminate, body function is reduced. After the injury is healed, the body function is not restored, and the strength, accuracy, and coordination are generally worse. Those are the moments when it is likely to see damage. The influence of psychological effects on human behavior can not be underestimated. If the emotions are not strong, the mind becomes restless, and even worried. As a result, the thoughts are not concentrated when doing the action, and the deviation of the action may cause accidental damage.

5, Improper diet, bad living habits

Irregular diet, chaotic eating or other bad habits can cause physical discomfort, not to mention the fact that dance itself requires high-intensity physical support and attention. In the case of a weak body, fatigue usually occurs, which eventually leads to injury.

6, Other factors

Temperature can also be a cause of damage: cold weather or insufficient preparation activities makes it easy to strain or sprain muscles; hot climate or where the temperature is too high makes it easy to dehydrate, fatigue, in the end affects the overall function and decreased reactivity. All these cause injury. When the floor is uneven, it might cause slip, which can sprain the ankle joint.

IV. Prevention from Dance Related Injuries

This section identifies the preventive measures a dancer can take to prevent from injuries.

1, Stay away from incorrect action

- Each dance has comprehensive training system, and repeated exercises of these movements can help the dancers minimize the chance of injury. Therefore, proficiency is the first step in preventing injuries.

A feather-soft landing should be a fundamental of every trained dancer, however too many do not have and even the best can miss it at certain moments. Take the example again of Bruno Da Rocha Pereir, a very talented and technically strong dancer. Unfortunately, he landed once by releasing the heel too quickly, creating a bony smack on the floor and causing damage to the Achilles tendon. He reflected his experiences and gave a tip: “Try thinking of the foot as a pure, powerful muscle with no bones at all. This may help the landing and the takeoff be one continuous motion rather than a jerky one.”

- Concentrate on correct posture and your dance technique. The way a dancer connects one movement to another must be technically correct so as not to twist the body incorrectly or strain a muscle.

In fact, many female and some male dancers with beautifully extended feet make an error landing with little control. Over my professional dance career, I learned a tip through personal experiences and discussions with colleagues: try extended reaching for the floor by the toes and practicing many slow extensions of the foot, many slow slides into lunges in all directions, careful and focused small leaps,

jumps and big leaps ending in full, soft pose. The resilience and power of the toes will grow with these careful exercises and you will be jumping higher as well as landing like a visitor from space.

- Talk with your dance instructor if you have a problem or injury. They may be able to modify the move and teach you a variation to reduce the risk factors.

Teachers appreciate and need to know if you are in trouble or limited in some way. Knowing that the teacher knows will relieve some of the pressure when you are in difficulty.

A note to teachers: In the passion for giving exciting classes and attracting many students, please don't get to the challenging sweaty stuff before the bodies of your students are ready. By "ready" it means: First, that time in the class when their bodies are warm and ready; and second, that time in their training when they have the fundamental skills to deal with "the really interesting stuff." Both take time.

A note to students: If you are "off" or have pain but you are still taking class, please help yourself and your teacher by finding a moment before class to let the teacher know, who will then help find an inconspicuous spot to work.

2, Stay Away from Excessive Work

I believe that specifically focused work with free weights, clear goals, motivated physique and intellect can work minimize risk of damages.

- Sit down and watch, sometimes you can learn more from watching than actually doing something for the first time.

- Make sure you take sufficient rest between dance sessions. This will help minimize muscle soreness or stiffness.

In dance, the body is our instrument. Unlike guitar strings, you can't buy Achilles tendons every time they break – you only get two.

It's also the responsibility of teachers, choreographers, directors, (and executive producers) to create an environment that respects the rest required to protect the dancers' bodies and maximize their charm during performances.

As a matter of daily practice, napping is my meditation, mind wash, renewal and general all-around tranquilizer. Depending on how sleep-deprived you are, even a 10-minute nap can give a measurable performance boost, from heightened alertness, mood, cognitive performance and memory to increased grip strength and sprint time. Making a nap a regular part of your routine may boost these benefits further.

3, A thorough work out before and after

“A warm up should be carried out before all dance activities and , if effective , can improve physical and psychological performance while reducing the risk of injury.”⁵

Warming up slowly prepares the body for the transition from everyday life into the challenges of the higher intensities of physical activity by gradually increasing the rate of breathing, heart rate, and the efficiency of the energy producing system. Additionally, when the body begins to move, there is an increase in the energy required by the working muscles. This means a dancer will consume more oxygen

⁵ Fradkin, A / Zazryn, T / Smoliga, J (2010), “Effects of warming up on physical performance: a systematic review with meta-analysis, Journal of Strength & Conditioning Research”, 2010, 24(1), p. 140-148

and metabolize more fuel in order to generate sufficient energy to power the muscles.

All physical activity that adds strength increases muscle tone. Muscle tone is a residual tension that exists in a relaxed muscle. It is precisely that which endows such subtle excitement to the sight of dancers at ease. But, the more tone, the more contracted the muscle, and consequently, the shorter its length. Keep that up and you arrive at what is known as muscle-bound, i.e., very strong but with little range of motion.

Stretching also decreases the possibility of cramping. It restores symmetry of alignment, which is particularly necessary after rehearsing or performing a sequence that heavily emphasizes one side or part of the body. Muscular asymmetry in the body almost certainly leads to profound injury in the future.

The purpose of stretching within a well-structured warm up is to mobilize joints and prepare them to safely carry out the range of motion required of the dance activity to follow. Stretching activities should only be carried out once the body's core and muscle temperature have been raised, as warm tissues are more pliable and elastic. Once warm, stretching should be undertaken slowly and methodically, as rapid increases in muscle length can increase instability and reduce proprioception.

My own experiences are that a thorough and effective warm up should take about 15-30 minutes to complete. The required time is dependent on a number of factors including how much the dancer participates in physical activities that day, how warm or cold the environment is, how much space and time is available for the warm up, and the style and intensity of dance to follow.

According to E. Quin, S. Rafferty and C. Tolinson, "a warm up generally consists of three sections:

- A gentle pulse-raising section

The pulse-raising sections aim to increase cardiorespiratory and metabolic rates; these are the prerequisite to all further activity.

- A joint mobilizing section

The joint mobilizing section consists of gently moving the various joints through their ranges of motion.

- A muscle lengthening section

The purpose of the muscle lengthening section is to prepare the muscle for the demands to come through the use of dynamic stretching. It is also appropriate to include remedial exercises for injury prevention purposes at the end warm up, and mental skills and preparation can be included at any stage. ”⁶

The dancer must consider the goal of the upcoming session and structure the warm up accordingly. For instance, if the activity is a technique class the dancer will benefit most from moderate pulse-raising movements, such as walking, jogging, gentle joint mobilizations, i.e. activities that raise the body temperature prior to the start of class. When the dancer’s body is warm, it will be better prepared to focus on technical and artistic development. On the hand, when preparing for a rehearsal or performance, a dancer may benefit more from a technical warm up, such as a ballet class, contemporary class, or rehearsal itself.

⁶ Quin, E / Rafferty, S / Tomlinson, C (2015), “Safe Dance Practice”, USA: Human Kinetics, p. 112-126

Some suggestions to consider when designing a dance warm up:

- Pay attention to how the body is feeling, and any areas where special attention is needed, such as overuse, pain or injury. Take a moment to center the body and mind.
- Introduce a gentle pulse-raising activity with continuous movement, and gradually increase the pace until breathing is faster and the heart rate has increased.
- Begin with simple, easy going, flow and full body movements. Once the body is warm this can shift to more dance-specific movements.
- Mobilize all the joints in the body, including the spine.
- Make the warm up activities specific to the dance style.
- Create a goal or positive self-guide.
- Do not neglect the upper body, especially in the dance style includes upper body weight bearing and partnering work.
- Engage with other dancers – find a partner and share weight or balance against each other in some simple partnering to better connect brain and body.
- Once the body is feeling warm, start some power movements like small jumps and follow by some bigger ones.
- Pick up the pace and progress to movement with speeds nearer those will be used later.
- Once the muscles are warm, use dynamic stretching to take the body segments carefully through full ranges of motion. Save static stretching for the cool down or the end of the day.
- Create a challenge by including some quick precise movements that might be similar to the dance activity to follow.

Even for the non-sweaty type, the dancer is expected to feel hot, sweat lightly, breath heavier than normal, and exhibit an elevated heart rate at the end of warm up. The joints and muscles will move easily through their full range and the

person should feel alert and ready to meet the mental and physical challenges of dancing.

What all of this comes to is that the classic length of a dance class, ninety minutes, is too short. Add another thirty minutes and there is time to explain things more carefully, give more individual corrections, and still allow for cool-down and stretch time.

Warm clothing and continued movement will help keep the body's core temperature elevated. In general, the time between the end of the warm up and the activity should be kept to a minimum, so the body does not cool down.

4, Mental awareness

- Perspective of pain

Using pain to starts with gaining a realistic perspective on it. This process begins with understanding the difference between soreness, suffering and injury pain.

What we feel most often in dance, however, is pain or soreness, which is physical discomfort caused by efforts in our dance training and performances. It hurts, and it can interfere with our efforts, but it is largely within our control because we can ease the discomfort any time we want to by simply slowing down or stopping. It is always temporary, even for certain extreme soreness or exertion pain, curing it is only a matter of time. Knowing that it will pass also helps us psychologically.

- Interpreting pain

Two facts influence our perception: physical and psychological.

Pain involves a physical experience that we have to take care in our training. However, the pain we feel is affected by how we interpret it, what we think about it, and what emotions we connect it. Moreover, the way in which we interpret our pain can either act as an obstacle to achieving our dance goals or propel us to new and higher levels of dance.

- Ignoring pain

In my dance career, I tried to ignore pain based on the rationale that if I don't think about the pain, then it won't affect me as much. I will try to focus on listening to music, talking and chatting to friends, do some extra trainings like Yoga and Pilates, or just think about other things. I find this can work when pain first appears, especially with exertion pain, which may not be severe and may not have been around for very long. My experience is that the long-term pains made it harder to tell between the physical and psychological pains. At that moment, I chose to ignore it. Because in the process of recovery, pain is inevitable. I believe this should be regarded as a kind of self-hypothesis and self-comfort. However, ignoring pain as a long-term strategy is ineffective. As pain grows, it can't be ignored anymore.

- Pain is our friend

This process of making the best out of pain starts with recognizing that pain is a normal and necessary part of our training and performing. Pain becomes our friends through experience. As we gain experience with pain, we become better able to deal with it. We learn how pain affects the way our body feels and our mind reacts. The reason to say that a pain is our friend is that it helps the learning to distinguish injury pains, which allows us to make smarter choices in our dance training and to learn how to manage it more effectively. . Pain also gives valuable information. It tells how hard we've worked. It also gives us direct information about our techniques, body positions, postures, nutrition and hydration, among

others Responding to this information can help us in many ways. A few examples include drinking more water to hydrate our body, lowering our training effort, informing the teacher during the class and helping ourselves or others understand our alignment and techniques, or recognizing that certain movements are dangerous to our body.

- Mastering pain

Psychologically, pain can lower our motivation and confidence, distract us, and produce unhealthy emotions, such as anger and despair. However, we can employ several strategies to reduce our experience of it, thus enabling us to persist in the face of the discomfort and maintain our highest level of artistry and excellence.

Deep breathing may be the simplest and the most useful technique for reducing pain. In a training world, we often hear “inhale and exhale”. This simple step helps us maintain a good rhythm in training. It also diminishes anxiety and tension by transporting sufficient oxygen throughout the body, relaxes the muscles, and decreases the nervous system. In my daily training, deep breathing helps me focus more, and actually helps me pay less attention to my pain.

Second, we can relieve the tension and the pain by relaxing our muscles. There are two ways to relax the muscles: mentally and physically.

Mentally: Whenever I am preparing for training or stretching, I always bring headphones and turn on the music. Or, after the training, I will turn on the music and lie on the carpet so that my body and mood can be quiet and relaxed. After an intensive work out, a self-meditation and mindful practices can be powerful and peaceful for our body.

Physically: A long-lasting dance career requires a solid and healthy body. Maintaining a good body and avoiding injuries is actually a compulsory course

for many dancers. I found that a massage can relax the muscle pain after training. Sometimes extra training can help reduce the pain. For example: Every morning before the ballet class, I would insist on training Pilates for 30-45 minutes. Until now, I still stay that way. I learned how to analyze all parts of the body. It can help me mastering and even controlling the pain from dance training.

Mastering pain in a relevant way will help us view the pain in a positive energy that inspires us in our upcoming dance efforts.

- Emotional reactions to injury

Physiological pain will bring us a series of emotional reactions, because an injury can destabilize our sense of self.

My experience was that the first emotional reaction after the accident was shock and fear. Fear may be the most worried emotion for dancers because it wakes uncertainty and the “what-if” kind of thinking. This feeling of fear even directly considers the worst-case of our career, rather than making plans for rehabilitation. Next, we will have some emotions after the accident, such as guilt and shame. I have asked myself many times: What if I warmed up better before the accident? What if I took easier on that day? Even, what if I called in sick on that day? I started blame myself and felt guilt and shame for being unable to dance. It was a terrible feeling. In a long-term injury, we accept the fact that the injury will take time. It is the numbness. In the eyes of everyone, we are the victim. We receive these greeting messages from families, teachers and friends: How are you? How was your injury? How do you feel? Do you feel better? This high-density, continuous greeting drives my emotion into numbness zone. Numbness is not a bad thing. It blocks some information that I don't want to accept, so I can concentrate on rehabilitation.

All these unpleasant emotions enable us to be aware of the injuries and move toward our recovery and return to dance.

- Injury rehabilitation

Due to the length and intensity of the rehabilitation process, we should establish and maintain a high level of motivation in recovery efforts. We can set a goal, focusing on the long-term objectives. A goal setting provides several benefits, physically and psychologically. set goals for overall physical training to help us return to dance in top condition when our recovery from injury is complete. By developing on technique around injuries, such as working on upper body and arms, we can also focus on and improve psychological and emotional areas by asking our teachers, ballet masters and friends, what they would like to see us improve on, and then address them using the many prime dance techniques. Sometimes, we might need to get help from a psychologist, who can guide us more completely through our psychological and emotional rehabilitation. Set a series planning, and it will guide us towards a healthy and a long-term dance career.

An injury affects all our confidence. We easily get to doubt, worry, feel negative and stressed. Relaxation and positive thoughts help us become more motivated, relaxed, and focused. Take time, take easy, follow our rehabilitation goals, and with a bit more imageries, structure every step. To keep my high confidence, I imagined my positive memories, such as when I had a challenging ballet class, success with a difficult choreography, and a wonderful performance that I made before my injury. These great experiences remind my enjoyment, remind me that I am a great dancer and I should not let the negativities take over the confidence.

“Dance requires high levels of concentration and mental readiness; the dancer can also use imagery or mental practice during the warm up.”⁷

A warm up is just as important for the mind as it is for the body. An effective warm up can be a good mental transition from the concerns and pressures of everyday life into dance activities. Mental preparation can help dancer to focus, which may enhance concentration on technique and potentially reduce the risk of injury. The dancer should acknowledge any pain or discomfort or any areas of unnecessary physical tension during the warm up. It might be helpful to focus on a goal for the day such as bringing artistic quality to each exercise during the class or rehearsal or to follow, or acknowledge their hard work in preparation for the upcoming performance.

5, Diet and maintaining balance

Disordered eating is one of the biggest risks faceted by dancers, particularly women. Though few dancers develop a clinically defined eating disorder, many engage in some form of dysfunctional eating as the physical aesthetic is woven into the fabric of much of the dance world, especially in ballet. Quite simply, many choreographers, dance masters and mistresses, and dancers themselves expect dancers to look a certain way. The profound changes in dancer’s body caused by eating disorders trigger many physical problems that, if untreated, can become severe and permanent. If unhealthy dieting persists, as is the case with an eating disorder which makes the body lacks the resources to address any physical demands beyond basic functioning. You may find that you catch colds or other bugs more frequently and that they last longer and take bigger toll on your body. Injuries are also common among dancers who adhere to a highly restrictive diet or suffer from an eating disorder. The susceptibility to injury often results from what experts have referred to as the female athlete triad (also applies to dancers):

⁷ Wilmerding, M / Krasnow, D (2017), “Dancer Wellness”, USA: Human Kinetics, p. 78-98

restrictive eating, menstrual dysfunction, and decreased bone density. The combination of these factors can lead to stress fractures and broken bones, as well as sprains, muscle strains, and torn ligaments and tendons. In addition, when injury occurs, the insufficient nutrition also slows down the healing and rehabilitation process.

The psychological effect of eating disorders can also be substantial, though it is often more difficult to identify than the physical effect because psychological and emotional symptoms are less apparent and may appear more gradually. Performance related psychological problems associated with eating disorders can include a loss of motivation and confidence, an increase in performance anxiety, difficulty in concentrating, and extreme emotional sensitivity. More importantly, eating disorders take a significant toll on dancers' mental health. Specifically, considerable research demonstrates a strong relationship between eating disorders and higher incidence of sleeping problems, anxiety, depression and mood disorders. The bottom line is that decreased or improper nutrition can take a grave toll on a dancer's body and mind.

The best way to deal with eating disorders is to prevent them occurring in the first place. Fortunately, you can take a number of physical and mental steps to reduce your chance of developing an eating disorder. The first step is to gain awareness and understanding of what eating disorders are, how they develop, and how they can affect your dance and personal life.

Physical prevention

Learn as much as possible about how nutrition and exercise affect the health and the dance. In addition, consider meeting with a nutritionist and a personal trainer for help in developing eating and fitness plans that benefit your health and dance training. The following are certain basic guidelines that I have learned through

years of collaboration with a number of nutritionists, dancers, and personal trainers.

- Always begin the day with a healthful breakfast that includes protein, grains, and fruit.
- Eat at least three meals a day.
- Never skip a meal.
- Between the meals, eat snacks that include fruit, nuts, or cheese. In general, if you eat every three or four hours that include some protein, you will keep your metabolism up and avoid blood sugar crashes.
- Stay hydrated, particularly during long dance sessions, summer works, and sessions in a hot studio. Avoid caffeine (coffee, cola or other energy drink), which acts as a diuretic.
- Add resistance training to your fitness regime to increase your metabolism and burning of fat.
- Pay attention to your hunger and fullness signals and respond to them appropriately.
- Recognize your body's other signals that it need fuel. For example: fatigue, sleepiness, crankiness, headache, stomachache, decreased concentration, and spaciness.
- Cut or moderate your intake of caffeine and other stimulants.
- Learn how painful emotions and negative thoughts affect your hunger signals.
- Practice grounding techniques to stay connected to your body so that you can recognize its signals and respond appropriately.

Psychological prevention

Learn about any family history of eating disorders, alcohol or substance abuse, anxiety, mood disorder, depression, or any other psychiatric illness. In addition, be aware of any signs of these conditions in yourself. Notice messages that you

receive about body weight or appearance from parents, dance teachers, or choreographers – and how you react to them. These measures, early awareness, identification, and treatment can prevent such issue from developing into problems that harm your health and your dance.

The certain mental skills can be used to decrease the risk of eating disorder. For example: relaxation techniques, positive self-talk, mental imagery, and developing a balanced and realistic perspective on your dance life. These strategies are most beneficial if you incorporate them into your life. They not only help you improve your performance but also provide a protective effect against the development of eating disorders.

Other factors that can protect you from developing an eating disorder include a sense of humor, strong spirituality, optimism, good self-esteem, and good supportive relationships. You can also benefit from recognizing and accepting the limits of your genetically endowed body type. No matter what you do, you simply cannot sculpt your body into a form that it was not meant to take. If your body type does not fit the physical expectations of a particular dance style, school, or company, do not try to force yourself into that mold through disordered eating. Instead, switch to a different dance style, school or company that respects, embraces, or even celebrates the type of body you have. Doing so benefits both your health and your dance.

Water

Water is so important to the proper functioning of the body it must be considered a food. We can survive prolonged fasts, but shorter time without water would be fatal. Normally, dancers may lose as much as four quarts of water a day, which cause extreme thirst, giddiness, or a dangerous rise in body temperature.

To determine how much water you should drink, weigh yourself before you exercise and immediately afterward. Replace the water loss within the next few hours guided by your thirst in sipping liquids, eating fruits or vegetables, or

drinking cool water (if cool or icy drinks do not give you stomach cramps). Weigh yourself again to determine if your thirst has guided you to the right replacement amount. Thirst may not be an accurate indication of need for fluid replacement, since it tends to shut off before sufficient consumption. By following this procedure a few times, you will be able to determine your own rate of loss.

The weight you lose by layering rehearsal clothes on your body and by closing the studio windows to induce perspiration is only water loss – not loss of fat. Nor is perspiration an indication of hard work. You need oxygen to breathe and to function mentally while the working muscles give off carbon dioxide. There is no way to sweat off or spot reduce areas of the body with plastic clothing.

The usual recommendation that we consume six to eight glasses of water each day can be repugnant if your local water supply is unpleasant to taste and smell or even unsafe to drink. Although that amount of pure water is recommended for good health, it may be in different forms – juices, fruits, and vegetables. Plain tap water, if it is safe, is the most inexpensive, noncaloric, caffeine and sugar free drink to consume.

6, Others

- One of the risky moments is returning to dance after a prolonged rest, be it a pleasurable vacation or an unhappy recovery from injury. The rules of muscle strength and speed are not kind, as building is slow, while losing is fast.

This week is a most dangerous period. Dancers love to dance and infuse with delight and eagerness. However, one thing missing is the same muscle strength, and the requisite speed dancers had before the break. They need to [They need to] respond fully to the music and the demands of the dance sequence given, and be

miserably sore for the next few days. At the worst, it could be rest all over again. There are two stages to consider when returning to work:

a, Don't go to class at first. Do a own careful workout. Work slower, shorter sequences and for less time than before. There are so many great trainings which dancers can use as support, such as Pilates. The former Dutch National Ballet dancer, Maiko Tsutsumi, like Pilates as a very important daily auxiliary training. Pilates helps optimize physical fitness and prevent unnecessary mistakes. (Full interview please check Appendix: the survivors' talk - Maiko Tsutsumi.)

Pilates is a physical fitness system developed in the early 20th century by Joseph Pilates. It aims to improve flexibility, builds strength and develops control and endurance in the entire body. "Many dance schools and professional dancers recognize the value of Pilates as a training method for developing core strength, technique and connection with their bodies.

'Dancers regularly dance a combination of movements only on one side, especially in the corps de ballet, this can result in asymmetrical muscle development that may set you up for injury in the future. Practicing Pilates exercises using equipment, like a reformer bed, is particularly helpful for dancers as the resistance of the equipment means that it's far more difficult (and obvious) when stronger muscle groups on one side of your body try to take over, forcing you to move in a more balanced, symmetrical way.'⁸

b, When returning to class, inform the teacher quite precisely as to where you are before the class begins, find an inconspicuous spot and work up to fatigue and no further.

⁸ (2017), Pilates exercises for dancers, <http://www.pilatesfitcambridge.co.uk/blog/pilates-exercises-for-dancers/>. Access date: 30-05-2017.

V. Recovery from Non-critical Injuries

Certain injuries are critical and mean an end of a dancer's career, while others are non-critical and recoverable. This section provides examples and useful tips to recover from those non-critical injuries.

1, Therapy

In the lexicon of healing gestures that we can have, three stand out as the most thorough and immediately satisfying: A warm bath, a good sleep and a good massage. One of the most common and most ancient of human gestures is rubbing a sore or injured body part, massage. Self-administered massage is among the most obviously and eminently useful by stroking and kneading with varying degrees of pressure. When we are in trouble, a competent masseur' professional massage will help. One of the miracles of this kind of 'healer' is that a simple, gentle caressing, or even a gentle pressure of the troubled area, can ease many physical difficulties.

According to Marian Horosko and Judith Kupersmith, "Most aches and pains will disappear after a few hours of rest or a good night's sleep. But arthritis, which typically begins gradually and tends to run a course of ups and downs, may be present. Aspirin, the most commonly used drug for arthritis or general pain, may

upset the stomach. (If it cannot be tolerated, aspirin substitutes or nonsteroidal, anti-inflammatory drugs are available. While steroids have become popular because they provide initial relief, long-term oral use of these drugs usually produces dangerous side effects. For this reason, the condition should be treated by a doctor. While arthritis is not curable, it can be contained. Exercises is not excluded in the treatment.”⁹

2, Training tricks

As I began to organize this chapter, I noted almost all the dancers have their own little training tricks. These are the little lifesavers we invent for ourselves as we duck and weave past the rough spots in our works, and can be useful during the recovery period trainings.

- Warm feet

This super simple trick is important for a professional dancer. Especially, keeping feet warm and dry throughout the winter is essential to health and a long dance life. For years as a ballet dancer and even now as a ballet teacher, I have worn more than [ten pairs of socks, shoes, or boots – do you really mean 10 pairs or just exaggerating?]from the moment the weather turns cold, and even in the summer. The inner sock can be thin cotton and the outer a light wool or nylon mixture. In addition, it is easier to get going with dance.

- Changing shoes

A good way to get through the week is to have variety of shoes with different heel heights. In this way, the angle of stress on the ankle joint is never quite the same from day to day or from morning to afternoon work. The usual recommendation

⁹Horosko, Marian / Kupersmith, Judith (1987), “The Dancer’s Survival Manual”, p. 53-87

for an unhappy Achilles tendon is a heel lift. Considering all the force and violent stretching our work demands of the back of the lower leg, when we are not dancing, a modest heel lift is much to be preferred over flat, no heel or low heel shoes or sandals. Even if you have the best designed arch in the world, a shoe with an arch support is an act of kindness to that exquisite bridge that serves you so well in the dance studio or on the stage. Also, badly fatigued feet can profit from elastic bandaging during long rehearsals.

- Salt

Salt may be a key factor in the diet of people who are genetically destined to risk high blood pressure, a daily amount of one tenth of a teaspoon is vital to life. Our brain signals hunger when the body does not have enough salt to control the amount of water between the cells. A salt-deficient person is likely to feel weak and lethargic. Muscle aches and cramps follow almost any physical exertion.

Caffeine drinks and alcohol act as diuretics and increase water loss through the urine, while sugared sports drinks promoted as thirst quenchers or electrolyte replacements add calories. If dancers lose over three quarts in perspiration per day, add one half tablet of salt to diet.

3, Diet

Proper diet is very important during the recover process. The best way to maintain a stay-thin-healthy diet is with the help of a nutritionist. Since nutritional needs are individual, consulting a professional nutritionist is wise even though it may be expensive. Finding a suitable nutritionist to assess your needs may be as elusive as pursuit of the ‘perfect body’. Most doctors find dancers too thin and abusive to their body.

Starting young on a varied diet, eating small ‘meals’ four to six times a day, drinking plenty of water, and avoiding binges will establish good nutritional habits. But dance mythology about food and vitamins is hard to avoid as time goes on. There are temptations to crash diet, use drugs, or otherwise abuse the body. Crash diets never work because the body loses only one kg of fat per week. If the weight loss is greater, the loss is in precious minerals, water, and muscle.

Here are the food groups from which dancers should choose every day for a healthful diet. The amount of the necessary servings may be small and spread out over the day in five or six ‘meals.

- Milk and cheese

These calcium-rich foods also contain fat, cholesterol, and calories. Choose low fat or skim milk, buttermilk, yogurt, ice milk, and hard cheese over whole milk contents.

- Fruit and vegetables

These fiber foods provide vitamins A and C, and carotene. Select dark green vegetables for riboflavin, folic acid, iron, and magnesium; citrus fruits, melons, berries, and tomatoes for vitamin C. Collard, kale, mustard, turnip, and dandelion greens provide calcium. This group is low in calories.

- Meat, fish, poultry, beans

These sources of protein contain phosphorus, vitamin B. Select lean meat with fat trimmed off, beans, peas, soybeans, nuts, liver, and egg yolks. Haddock, cod, flounder, and halibut have somewhat lower amounts of cholesterol than shellfish. Choose chicken and fish over red meat but include red meat once a week in your diet.

- Bread and Cereal

Grains are sources of the vitamin B, iron, protein, magnesium, folic acid, fiber, and vitamin A, C and D. They contain no cholesterol. Check labels for added sugar, refined flour, fats, and preservatives. Choose bran and whole grain products. Pasta, recommended in this category for quick energy, may be too filling and uncomfortable for the dancer. But a small quantity can be substituted for rice or potato.

- Fats, sweets, and alcohol

Although high in calories, this category is rich in vitamin E and fatty acids. Select margarine over butter; lemon juice over mayonnaise or salad dressings; dried fruit over candy, jams, jellies, syrups, or other sweets; water or seltzer over soft drinks; white wine over beer or liquor.

In summary, a good diet is important for recovery and best recommended by a nutritionist on an individual basis. Information should not come from radio or television advertising, magazines, or from ‘friends’. If the diet contains whole grains, fresh vegetables, fruits and protein, milk, and if the meals are eaten in small quantity throughout the day without overloading at any one time, the dancer will establish good habits and find no need for a crash cycle. Drug use that purges the body of valuable minerals and vitamins along with excess food may become a psychological as well as physical problem.

4, Positive attitude

Staying positive is important to the recovery process. At some time in a studio or rehearsal, everyone has felt threatened by the talent or opportunities given to others. It’s a question of the degree to which you will let the feelings go.

Admitting envy may result in helpful and positive imitation of the qualities in the person envied, or it may help us reinforce efforts in our own behalf. But when envy is not utilized and is permitted to grow into jealousy, we may blind ourselves with resentment, and stifle our progress with an unreasonable evaluation of the advantages we attribute to the object of our jealousy. The tension created by competition can be stimulating, but becomes offensive and self-defeating when it creates discomfort, unfairness, and hostility by excluding cooperativeness and consideration for others. Everyone has seen hotly competitive dancers who push to the front line of a class, crowd others on a diagonal, or place themselves under the nose of a director at an audition.

Competition provide a healthy learning experience when it does not defeat self-confidence. A test of any kind reveals only what the dancer has achieved at a given moment in comparison to others. It does not guarantee future advantages. It's not easy to be objective about yourself or your work in a competitive situation, but you learn most when you learn from others and compete only with yourself. And there has to be a certain amount of joy in the process, a feeling of elation, excitement, and satisfaction. If there isn't, you have to face the blocking fears and frustrations.

It would be helpful to make a realistic assessment of a competitive situation that includes exactly how, when, where, and why you do or do not do well. Try to meet the favorable conditions in your assessment each time as you strengthen the weaker elements. In this way, you can plan your strategy and meet your expectations without berating yourself. Redefine wining, remembering that no one performance is going to change the course of your life. Whatever the outcome of any contest or audition, you have 'won' by trying your best, independent of what others say or think. Redefine failure as to others, they will have to deal with that themselves. If you stay in touch with your feelings, you will be able to trace the source of an upset and come to terms with it as a course of action or changed attitude.

While the fear of failure followed by the embarrassment of facing friends or peers may dissuade you from taking a competitive risk, to some the fear of winning may be just as riveting. Many dancers blessed with new roles and destined for stardom are big self-doubters. They fear they are not good enough and that they might fail to meet the expectations placed upon them. Rather than lose harder battles after easier wins, they may never allow themselves to be as good as they could be or permit too high a rise in their rank. Because new roles showcase inadequacies and invite comparison, the pressure of good opinions, sometimes a strong motivator, can become over-whelming. The unconscious way out of this predicament is sometimes to permit oneself to become overly fatigued – a reliable and excusable environment for injury – to resort to substance abuse or overeating, or to lessen the performance level until easing out the limelight.

The dancer should put aside the anxiety of being replaced when too tired physically or mentally to continue a rehearsal schedule. You cannot play Russian roulette with your body. Understudies are the business of the administration and directors, not the dancers. Don't permit anyone, including yourself, to suggest guilt when you have reached and indicated your limit. You have not lost your one and only chance for success. Have the courage to tell your director that in order to assume your new responsibilities to the best of your ability and to maintain an enthusiastic attitude and self-confidence, you have reached a limit. That, too, is not an easy task, but if you create a history of reliability and high-performance levels, you will be respected for knowing your potential and not considered a self-limiting performer.

5, Meditation

This moment at the end of the day is as good a place as any to talk of meditation – what it is and what it is good for. Among its many benefits, meditation helps recovery.

The human mind has the capacity to be aware of and deal with a tremendous variety of stimuli. In any social situation, for example a meeting with a group of people, your mind contains the people there: what you think of them, what they think of you, what you think they think of you, and all the complex situation. It is quite an amazing and necessary skill and sometimes it is unbearable. Sometimes it is all just too much and a nap, a rest or going to sleep doesn't take care of that sense of being overwhelmed. You have to be awake and somehow what your mind needs most is exactly what the teacher world sometimes asks you to do: Please clean the blackboard. Sometimes your mind cries to be cleaned of the things and details if you are to move on to the next step. Meditation can do just this.

All forms of meditation do basically one thing: They ask that powerhouse that can be aware of and deal with so many different things simultaneously to focus on but one thing. Almost always that thing is not complex, and almost always repetition is involved. Meditation techniques, depending on the culture and the person, will focus on breathing in a prescribed way (yoga) or the making of a sound (the Buddhist 'om') or the repeating of several syllables (a Transcendental Meditation mantra) or counting from 1 to 9 over and over again "(Zen)"¹⁰ or turning in one place for a very long time (Sufi dervishes) or looking at a light or even twiddling the thumbs.

Out of my own experience, the experiences of friends from various cultures, the values of meditation are such that it behooves everyone to at least make a stab at it. As a way to relieve stress, attain clarity and open creative doors, it can be practiced at any time of the day, night or even in the middle of the night.

¹⁰ Zen – (Chan) Chan Buddhism was influenced by Taoist philosophy, especially Neo-Daoist thought.

VI. Conclusion

It will be remarkably fortunate to have a career in dance without difficulties – no search for the best dance education and financial strain, and without obstacles in a career or emotional upheavals.

Most professional dancers, no matter how successful they may seem, have had many moments of doubt, disappointment, and insecurity mixed with the excitement, joy, and sense of accomplishment that their talent can bring. They have been able to maintain enough stability to overcome disruptions in their professional and personal lives yet remain dedicated to their art without costing too much of their progress and happiness. On the other side, much talent is lost through incorrect training, insufficient support from family and friends, and psychological disturbances.

Dancers have rights to reach their potential indifferent of their geographical location, financial status, or background. To help, I have concluded eight ways for dancers to dance long and healthy:

1, *Prepare properly* in the study of dance whether you plan to become a professional or not. The argument for the best training is the same as that for learning to swim or drive a car properly – you may never become an Olympic star swimmer or a race-car driver, but you might need to know how to do either or both of these things very well in an emergency. The emergency in dance is your safety. Good training lessens the possibility of injury, accidents, and discomforts later in life.

It costs as much for good training as it does for poor training and takes as much time. Lost time in a young person's training in dance cannot be recouped to the same degree as in other disciplines. The body does not permit it.

2, Order your life, study, and stick to your priorities. There is science in the art of dance as there is art in science. The science of dance is based upon immutable principles of anatomy, physics, and gravity. These principles are in the correct execution of the syllabus of every dance discipline. The syllabus cannot be rushed since it takes mastery over every principle to reach the next. Mastery requires order and daily renewal as well as the extension of effort. The goal is to acquire control and coordination of the body as an instrument, while the mind is left free to express the emotional content of the material.

Don't be reluctant to start over to repair bad habits. Refresh and rethink your understanding of basic principles regularly. Read descriptions of familiar steps as well as new step in some of the excellent textbooks now available.

3, Find a balance. Eliminating other interests or relationships at any age level can topple your sense of proportion. Of course, your responsibilities to parent, school, dance, job, progress, and friends or lovers have to be balanced in your life in various proportions, then reevaluated every now and again when you feel the need. But balance is the key word. Your task as a performer is to reflect life in a bigger than life projection. The more you avoid interaction with non-dancers, the less you will know about how others feel, and the less you will feel yourself. Reach out to the good in others, to those talented in other areas of life.

4, Reevaluate frequently. Don't berate yourself for not having the current fashion image or preferred figure. Take calculated risks with a new role, new work, new type of dance study. Don't ever settle for what others think of your talents. Don't place limits on your goals. Enjoy as far as you go and go as far as you enjoy. Integrate those fantasies with reality. Face the unexpected. Let your life and talents evolve from your inner direction.

5, Create your own style and individuality. If you find you cannot reach the next level of your plan, find a new place to reach. Or if you have been limiting yourself

with negative opinions, lack of support from others, or have become depressed or immobilized with fear or indecision, reaffirm yourself. Promise yourself that whatever others say, think, or do to you, you will seek your good, successful, and happy existence and that you will correct your attitude whenever you meet these conditions. Get professional help. Well-meaning amateurs consume your time. Walk away from sickness in others until you are able to make suggestions without personal involvement.

6, *Dedication freely given is not at cost of comfortable living and good health.*

Success should bring greater ease, a bigger sense of emotional security, and robust endurance and strength. Deprivation in any area indicates an unrealistic and uncreative solution. Solving some of these problems may mean facing the limits of your talents. Then you will have to become content with that or change course into a more creative outlet that will use your experience, training, and dedication.

7, *Take responsibility for the conditions of your work.* You inherited the benefits

of the efforts of others to correct misdoings by managements, diet, deplorable work and travel conditions for performance. Now maintain those gain as you find solutions by joining with others to improve whatever you find unsuitable, lacking in dignity, or disrespectful. Whatever your station in the profession, you are neither above nor beneath the effort. By participation, you are in some control over the rules by which you work and live. Don't give up your right to affect legislation.

8, *Face the inevitable changes in your career as a continuation of your development.* When you decide to stop dancing because of an injury, a limit of

your capacity, or unwillingness to face internal changes within an organization, expect a period of loss from performing. You will mourn. You will also feel a lack of self-esteem and feel inadequate in the nonperforming world. You have not yet learned how many assets you have and the extent to which your past

experience is superior to most educations in providing you with the means for the continuity of your career.

If you have developed interests along the way, you know where you might seek a challenge, where you need further education, or where to seek help.

Above all, don't stop dancing. Admittedly, this is difficult to do when you fall short of your professional standard. You need to exercise at every age and dance will be far more interesting than riding a stationary bike, swimming, or bounding through an aerobics class. You will be the best again in your class. Stay healthy, strong and flexible.

Dance will never leave you even when you leave dance. The most beautiful of all the arts will still be there whenever you see the movement of a swaying flower, watch a child or pet run at top speed, go to a performance, or respond inwardly to music at a concert. Dance may leave your body, but it will never leave your mind and heart. Weren't you lucky to be able to be some part of dance, whatever fate gave you in time and talent.

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Appendix: the survivors' talk

Below are interviews of current and former dancers, including some who suffered little injuries, some who had non-critical injuries and went back to stage, and some who had critical injuries and stopped dancing.

What type of dance injury did you experience? What was the cause?

Anu Viheriaranta: I have had many many injuries that have taken me from the stage. Two severe muscular back injuries, multiple sprained ankles, strains in the calf and hamstring, and hip, multiple neck injuries, and this is just to name a few. The cause is that I am an athlete who works six days a week for eight hours a day, constantly pushing my body to the limit, over and over, and I have been doing that for 21 years. I think considering that, I am doing pretty well!

Bruno Da Rocha Pereira: A lot! The worst thing is the rupture of the left leg Achilles tendon, which is still bothering me. I had two surgeries because I didn't succeed for the first time. I lay in bed for 45 days after the operation. Because of my Achilles tendon is relatively short, I didn't control the landing well when I was making a big jump, which caused disaster. Of course, this is related to my high-intensity training.

Mao Jing Jing: Toes, ankles, knees, hamstrings, hips, shoulders, neck, almost all kind of injuries that dancers will have. What has been bothering me the most is toes. I am a big girl, you can imagine the pressure on the toes. Bruise, toe deformation, especially joint dislocation. There is no cause for me, because it has been bothering me since I started pointe training on the first day.

Maiko Tsutsumi: I had a herniated disc on my lower back. It is one of the common injuries of dancer and most of the time doctor offers to operate.

The cause was probably over loading body with the work I had to cope with. That time I was busy with big jumps involved variation, using body in a very different way from usual classical ballet technique and without proper rest in between.

How did your injury affect you as a dancer both mentally and physically?

Anu Viheriaranta: Each injury is different obviously based on if it's muscular, tendon, bone, or stress. They all have very different recovery times and they all take a toll on you mentally. You work so hard every day to prevent things from happening, but the body is not a machine, so things break down. A big injury can affect you mentally just as much as a small injury that stays around for a very long time. Every day is a struggle, and mentally you become very tough. But you also become very grateful for the life that you have and the body you have. What we are doing with our bodies is not normal, so you have to give it credit.

Bruno Da Rocha Pereira: I had to stop dancing because I couldn't go on Relevé anymore. It was hard for me to stop that time because I was preparing for Pas de Deux of Sleeping Beauty, a piece that I'd always wanted to dance. In the early stage, I was very positive about rehabilitation training. But the pain and wound healing never left. I was frustrated, I didn't want to go to the company, I didn't want to meet my dancer friends and things related to ballet.

Mao Jing Jing: Frustrated, lost, regret! No No No! I think it's wrong to feel those things. People are disappointed not to see you on stage, yes, but they are not disappointed in you as a person. Getting injured is not committing a crime. Most of the time it's not your own fault you get injured. As long as you take care of your body the best you can, you have no blame. Ok, if you go on stage without warming up properly and rip your calf, then you can be mad at yourself for a while... but then you know that won't happen again right?

Maiko Tsutsumi: My technique had to change a lot. I had to find different way to dance and use my body. I learned the limit of my body as well.

And mentally I became more careful which affects a lot also physically since I started to avoid the movement which causes pain. Most of the time I had to be caring my back, so I became more tired. As well as it made me worry what I can do after dancing career, I knew it was coming close to end although I still could keep on going for couple of years.

Being injured, you find a lot of time for yourself, so it was a chance to re-think about my way as well.

How did you approach your recovery?

Anu Viheriaranta: You listen to your body. You can't rush recovery. You also have to find the right person to help you heal. Whether that be personal or professional. Your body cannot heal until your mind is calm. You have to forgive yourself and not blame yourself for your injury.

Bruno Da Rocha Pereira: First, a good surgeon. Second, a good recovery coach. Third, eat well and keep myself busy. I was eating a lot. I found that a good diet is very helpful for recovery. Although it will cause weight gain, it will lay the foundation for the subsequent high-intensity training. I am trying to enrich myself. I always wanted to do a lot of things. During that period, I had time to try and even prepared for the future. I am always interested in stage managing. I had chance to managing a full-length ballet with my colleagues. It was amazing.

Mao Jing Jing: Already early in my career arthritis developed in my big toe joint and that was quite difficult to cope with as there is no real cure for arthritis. It was suggested that I have a joint replacement but there was a big risk that I would never be able to dance again. I decided to not to do it and for many years I took anti-inflammatory tablets which really helped me to not to feel the pain. It was not good for my stomach, but I had no choice.

It was too painful to do high pointe work, therefore I started to mostly work in soft shoes with demi-pointe. Somehow over the years it settled down a bit and I got used to living and working with it.

Maiko Tsutsumi: I had to stop at least for six months. When the disc is out, just to walk is triggering pain. So, laying down position was the most pleasant position to be. After I pass the phase of not feeling so much pain when I walk, I started to have treatment at the physiotherapist. But for Herniated disc, there are not much treatment that they could do so most of the time they were trying to create some space in between vertebrae. Some of them suggested to do an operation but I listen to others who mentioned that if I still wanted to stay active in dancing, it is not wise to do an operation. With operation, they could hurt small muscle that is necessary for dance movements. To release muscle tension, I tried acupuncture treatment as well.

After that I slowly started with strengthening body and when my body was ready, I went back to daily ballet class and rehearsals. Though it never recovered how it used to be.

What was your motivation to heal?

Anu Viheriaranta: To perform again.

Bruno Da Rocha Pereira: I have three girls to take care, my wife and daughters. I have to earn money and support my family. And plus, I promise my daughters that I will show them The Nutcracker in Christmas.

Mao Jing Jing: I have been fighting with the pain and injuries for so many years. If the performance is the whole dinner course, then the injury pain is like the starter. I don't see it as a motivation. Let be, and I'll go for it.

Maiko Tsutsumi: My motivation was that I still wanted to go on with my dancing career. Also, when the body is healthy, the sensation of dancing ballet was very enjoyable. I lost a lot of technique after the injury, but the mind still remembered it, so to approach as close as possible to it made me try to find the way to work with the problem.

What was the key to your recovery and return to dance? Do you recommend any strategies for injury prevention?

Anu Viheriaranta: I found a chiropractor that saw my body for what it is, and wasn't mystified by it. It was all "at the right place, right time" sort of thing. I do believe in "if it's supposed to happen, it will" and I was supposed to somehow be given this gift, and he healed me. I will never understand or question how it came to be because it doesn't matter at this point. I will always be grateful.

Bruno Da Rocha Pereira: Disordered eating is one of the biggest issues for dancers. The dancer's daily schedule is also very unstable. We are young, there are so many unhealthy ways of living: skipping meals, junk food, going from extreme of restrictive eating to overeating, using diet pills, never taking a day off, smoking, drugs, etc. These unhealthy behaviors threaten our psychological, emotional, and physical health. I found healthy living habits and a good regular diet helped myself back and recover to dance.

Mao Jing Jing: I think one of the most important things is to thoroughly warm up and stretch your body before dancing... it helps a lot. Drink a lot of water, it's the key for all the dancers. Don't overdo or exhaust your body. I always say, stop while you're ahead. Injuries most of the time happen when you have past the point of strength. Strength building and over doing it are too different things. Listen to your teachers. Speak up if something is hurting. Don't hide the pain.

Maiko Tsutsumi: A lot of circumstances influenced for sure. First, the company was very helpful to understand the problem and they offered a lot of help. Of course, physiotherapist and masseur helped me but neurologist helped me as well to cope with the pain. When there is chronic pain, the brain functions in a very different way and he taught me how to control all those brain habits.

And second, Gyrotonic, Pilates and swimming helped me to re-educate my body and gain strength.

For injury prevention, I would like to suggest proper resting in between work, proper diet (not for losing weight), extra work out such as Pilates, Gyrotonic and Swimming.