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Module: Fit to perform

As a dancer, it is important to investigate and be educated in the subjects of anatomy, nutrition, psychology and fitness. The following information includes an article on each of these topics.

As humans, we have a few necessities that we must ensure to maintain as they contribute to a healthy life, and a functioning body. One of these necessities is vitamins. Vitamins are equally vital to each person, however, due to the unique working schedule of dancers there are certain vitamins that dancers must try to consume more of than the average person. One of these vitamins that prove highly efficient to dancers is vitamin D. As the work of dancers is traditionally prominently indoor based there has been a number of studies which have proven that a high percentage of dancers are deficient in vitamin D due to the lack of contact with sunlight hours. Professional dancers often dance between 6-8 hours a day, this means that they spend the majority of daylight hours indoors, which is therefore worsened during wintertime where they would quite possibly be arriving at their workplace in the dark mornings and leaving to go home while the sun has already set resulting in entire days without contact of sunlight.

Vitamin D is essential for building strong bones as it helps the body to absorb calcium. This is particularly important for dancers, due to the strain that is put on their muscles and bones each and every day because of the intense and strenuous movements that they endure. A lack of vitamin D could cause their bones to weaken due to a lack of calcium being absorbed into the body. This, therefore could result in more injuries for dancers, which could have a lasting result on their body and in some cases be fatal to their career. It is debated whether some dance companies should provide their dancers with vitamin D supplements, especially those who live geographically north in wintertime.

In 2013, Wolman et al investigated the levels of vitamin D over a 6 month period within a group of 19 UK based professional ballet dancers. Their findings included that during the winter period all 19 dancers vitamin D levels were either insufficient or deficient. The summer period did not see a high increase of vitamin D within the dancers as only three of them had normal levels of it. This emphasises how dancers may be more likely to suffer from a lack of vitamin D than those who have different professions as usually most people see a considerable increase of vitamin D levels during the summer months.

Although vitamin D is predominantly absorbed through the skin by sunlight, there are also certain foods that contain levels of vitamin D. This alludes to the importance of a balanced diet for dancers. With dancers not having much contact with sunlight it is important to find different sources of vitamin D. This vitamin can be found within some dairy products, as well as fatty fish such as tuna and salmon and egg yolks.

However, as most of these alternative sources for vitamin D are animal based products it faces the issue of the ever growing popularity of veganism. For vegan dancers these substitutes would not be suitable for their dietary requirements, thus vitamin D supplements may appear more appealing to fit their lifestyle. Despite supplements seeming as though they are the easier way to obtain the necessary vitamins 'Multiple studies suggest that taking more than 5,000 IU (125mcg)/day could actually negatively impact your performance, (Brown, 2017)'. A dancers performance is a key part to their profession, and so by doing something that may put that in jeopardy it may be worth speaking to a medical professional to certify whether supplements are suitable for the individual.

Professional dancers are often perceived as extremely fit and healthy beings who can maintain stamina during high endurance activities, yet on the contrary to popular belief it has been found that dancers generally lack cardiovascular fitness.

Dance commonly utilises the anaerobic system due to the activities often having a 'stop start' tendency. This leaves the aerobic system to be less engaged which consequently could lead to injury for the dancer. Some believe that during technique classes the focus should not solely be on fitness and movement but also involve cardiovascular training. Not only would an increase of cardiovascular training reduce the risk of injury, but it has a multitude of benefits, such as; an increase of stamina, an improvement of posture and it could increase the efficiency of oxygen supply to the muscles.

Particularly within technique classes dancers will perform for a short period of time with rest periods between each sequence, thus only developing the anaerobic system. The high demand for oxygen supply to the muscles during these intense bursts of energy result in the body using the stores of glycogen (stored within the muscles) as energy, due to the lack of oxygen reaching the muscles.

Despite the fact that anaerobic respiration is a valuable contribution to a dancers body it results in the waste product of lactic acid. This build up of lactic acid causes muscle soreness and will result in the dancer having to stop performing at their full potential; being unable to return to the activity until the lactic acid is removed. During this rest period oxygen is replenished in the muscles, thus refreshing the energy supplies resulting in the dancer being able to return to the activity.

Aerobic respiration occurs when the activity is low enough in intensity that the heart is able to supply sufficient oxygen to the muscles. Aerobic exercises often include lower intensity activities than anaerobic exercises but for a prolonged period of time than the short bursts of energy of anaerobic. The advantage of aerobic respiration is that the waste product of lactic acid does not occur. The only waste products of aerobic respiration are carbon dioxide and water which are dispersed by sweat and breathing out. Consequently, the dancer will likely experience less muscle soreness and will not have to postpone movement, resulting in a higher stamina and being able to maintain longer sequences.

For a dancer aerobic endurance training may be a valuable contribution to their training. It aims to improve the maximum oxygen intake (VO_{2max}) by partaking in continuous rhythmical activity. Cardiovascular endurance is important for dancers as it strengthens the heart and lungs, resulting in a higher amount of oxygen being used to produce energy, which eventually has the aftereffect of the individual being able to perform for a longer, more intense period of time. Aerobic endurance training will also result in the body improving its ability to recover from high intensity activities more efficiently.

It is suggested that cardiovascular training should be incorporated into the technique dance classes, particularly during the later part. It should be as critical to dancers as warm ups and cool downs as it has the potential to improve a dancers training massively.

When health and dance are thought upon in the same context most people would instantly think about physical fitness and bodily health, but perhaps not mental health. The positive effects of dance on people with mental illnesses, such as depression, may be the new wave of treatment available.

In the US one of the most common mental disorders is depression. It is estimated that 6.7% of American adults suffer from episodes of depression in a year long period. Depression causes feelings of sadness and a loss of enjoyment for activities that the individual was once fond of. It can have serious effects on the person that is suffering with the condition such as how they think, feel and deal with certain daily

activities. The majority of people who suffer from depression do not get help or treatment, 'only 10 out of 100 go to the psychiatrist. The other 90 don't go beyond the family doctor, and as only a small part of them can afford to be treated.

(Tavormina, 2018)' The people who do not receive help are often left to suffer alone even though depression is one of the most treatable mental illnesses.

The treatment for depression often includes medication however, if this proves unsuccessful psychological rehabilitation is an alternative option. Some studies have found that psychological rehabilitation is more effective than medication. Another option available is Art-therapy which is one of the most successful treatments. It involves creating art to help the individual to grow emotionally and physically and combat the negative effects of their mental illness. One specific type of Art-therapy is Dance Movement Therapy (DMT).

DMT is based on the belief that the body, mind and spirit are all interlinked together. It uses movement as a way to improve a person's emotional, cognitive and physical attributes. Dance can boost a person's mood which is extremely beneficial for those suffering with depression, as it could potentially give them moments of enjoyment that they were previously lacking. Depression can often cause the person to be anxious and stressed, so by using DMT it may help to give them moments of freedom from these issues. 'A study from the journal *The Arts in Psychotherapy* (2007) found out that dance therapy had a positive effect on participants experiencing symptoms of depression. (Tavormina, 2018).'

DMT gives the people undergoing the therapy the chance to express themselves and often, say things through physical movement that they would otherwise be unable to say in words, whether that be consciously or subconsciously. This type of therapy does not solely focus on literal words but instead physical expression by the use of “movement vocabulary.” By viewing each individual's unique physical expressions the therapists are able to tailor their future treatments accordingly.

By using dance to help those struggling with mental illnesses it is possible to give them a new lease of life and perhaps a new perspective of themselves by others, no longer just viewed as someone who is struggling mentally but instead a normal dancer who has the freedom to express themselves.

Not every person struggling with depression may be able to comfortably put themselves in a position of dancing in front of people as the side effect of anxiety may prevent them from doing so. Therefore it would be important to teach them a choreographed dance at first and slowly develop it into a free task once confidence is grown.

Typically, when people think of ballet dancers they are instantly drawn to the aspect of pointe, sequentially leading to the person wincing as it often associated with pain due to the unnatural positioning. But does ballet actually affect your feet?

Due to the strain on the feet bones and muscles during pointe it can easily lead to foot pain as well as injury and in some more severe causes even foot damage which is fatal for a dancers profession. It is not just those ballet dancers to perform pointe

that will experience foot injuries and those who aren't can still suffer with foot, shin and ankle problems.

Performing on pointe requires dancers to have a certain level of strength within their feet, ankles and shins. The majority of ballet dancers dance for years before they develop enough strength to partake in pointe. Typically they begin dancing en pointe at the ages of 11-13 as the feet bones have begun to harden at this point, making it safer to endure this strenuous activity with the lower risk of injury.

Not only are female ballet dancers at risk of foot injuries but male dancers are also exposed to the likelihood of injury, due to the extremely powerful jumps and lift work that they endure which could result in such injuries as sprained ankles and shin splints.

Some common injuries that ballet dancers obtain include: ingrown toenails, stress fractures, Hallux rigidus and bunions.

Professional ballet dancers are at risk of getting permanent foot, shin and ankle damage due to excessive pointe work. If small injuries are left untreated they can develop into more serious and permanent damage; for example, corns could develop into ulcers which would effect the dancers ability to continue with their career. There is a high pressure for ballet dancers within the dance world as main roles in performances are well sort after but extremely hard to achieve, thus making the dancer feel as though they are unable to take time off from dancing to the risk of

losing strength and these desired roles. However, by dancing on an injury it could lead to the treatment being far more serious, such as surgery.

Ballet dancing can evidently cause damage to the feet, therefore, if the dancer suspects they have injured their foot it is important for them to listen and act accordingly to a medical professional's advice and put their competitive nature to the side.

To conclude, it is important to expand your knowledge as a dancer rather than just focusing on outward appearance and getting physically fitter. By researching the areas of anatomy, nutrition, psychology and fitness it could help you to develop as a dancer mentally and physically and make you a more rounded performer. It will help you to learn new techniques that you can use in the dance profession and help you to keep up to date with new and innovative ideas from professional dancers and scientists. It is important to have your own knowledge of the world you are entering so that you can develop your own voice and ideas.

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