Analytical Essay on Volleyball: Historical Background and Energy Systems Discussion

The founding father of volleyball, William G. Morgan, was born at Lockport, New York in the year 1870. William attended Mt. Hermon Preparatory School in Massachusetts where he developed a relationship with James Naismith, founding father of basketball. James was impressed with William's passion for sports and being athletic and encouraged William to continue his education in the sports field. In the year 1895, William realized that the game of basketball recently discovered was too 'rough' for a businessman to play, so he began looking for an alternative. William was looking to create a game which involved no physical contact, so he took the ball from basketball, the net from tennis, the use of hands from handball, and innings from baseball to create 'Mintonette'. The game was introduced at a Physical Director's Conference in 1896, where it was renamed 'Volley Ball' by a professor (History of Volleyball). William G. Morgan

As the game was being played more often, the style of setting and spiking was developed, but it was clear that rules were needed to play the game fairly. For starters, the basketball was too heavy to play with, so Morgan contacted Spalding, a local sporting manufacturer, who designed a new ball made of rubber and covered with leather, the volleyball. In 1916, the American Sports made and published the official rules in a book called 'Official Volleyball Rules'. New nets and courts were also modified to make the game of volleyball unique from other sports. The only official equipment required for volleyball is a ball, a net, and a court, but obvious equipment such as ankle brace, kneepads, etc are not mandatory. Referee is recommended for unbiased and fair pick up games. There are six players on each side, only three hits allowed per side, a player cannot hit the ball twice in succession, and many more rules were added to make the game fun and fair for everyone to play.

The six basic skills of volleyball include passing, setting, spiking, blocking, digging, and serving. Passing is considered the most essential of the six because if you can't pass the ball, then you will never be in the position to score your team points. Setter is seen as the most important position on a team as he/she runs the team's offense. Spiking is the best and most efficient way to score points, the attacker spiking the ball makes it hard for the opposing team to score that point. Blocking is important for attackers as they have a chance to block the hard spike coming to their side of the court. Digging is important for the defensive players in the backcourt to try and get the ball up to the setter or else the opposing team would receive the point. Serving is also important as the team serving is trying to give the opposing team a hard time. A good volleyball does not have to be good at every single one of these skills, some are better than others in a specific skill, but at the end of the day, it all depends on if you got the point or not (History of Volleyball).

The objective of almost every game/sport to every be played is to win the game, similarly for volleyball the objective is to land the ball on the opposing team's side. The ball is put into play by the other team by means of serve, and the rally continues until the ball is grounded on the opposing team's side, the ball goes out, or the opposing team fails to return the ball. The team to win the rally scores a point and the right to serve, and the players rotate once clockwise. The ball must clear the net on a serve or else the other team is given the point. A game is played to

21, and the team that wins best two out of three wins the game as a whole. Volleyball is a sport which is a combination of multiple sports all in one, and also has no contact with the opposing team. William Morgan has changed the sports industry forever; he has allowed people who are not comfortable with physical contact to play a multi-combined sport. Sadly, William passed away on December 27, 1942 due to pneumonia, but his legacy will continue forever (History of Volleyball).

Energy Systems Discussion

There are three energy systems to be discussed, the ATP-PC system, the Anaerobic Glycolysis system, and the Aerobic system. The ATP-PC system provides the body with immediate energy for high intensity activities, and will provide for maximum intensity exercises, usually lasting less than 15 seconds. The Anaerobic system takes over after the ATP-PC does its job. Anaerobic system produces more power than the Aerobic system, but less power than the ATP-PC system. It has a larger storage but burns slower than ATP-PC and therefore doesn't fatigue quickly. The word aerobic means with the presence of oxygen. The Aerobic System uses carbohydrates, fats, and sometimes proteins to produce more ATP. The energy systems all enable every organ, tissue, and cell to function properly. Without these systems, our bodies wouldn't produce the energy needed for survival (Physiology).

The ATP-PC system plays a very big role in volleyball. The six basic skills required to play volleyball all use the ATP-PC system (spiking, blocking, digging, serving, etc.). These all require a powerful motion to jump and push. These motions last even shorter than ATP-PC, for approximately 2-5 seconds when moving to position then making contact with the ball. The ATP-PC system doesn't produce any lactic acid, and this is beneficial because this acid negatively impacts ones performance. Also this energy system only relies on phosphocreatine, no external sources such as glucose or metabolism. This system is very benefiting as it provides the body with a large amount of energy in a small time interval. This is very important as it provides the highest rate of ATP re-synthesis, not comparable to the other energy systems (Physiology).

Glycolysis is the production of ATP through the breakdown of glucose. The Anaerobic Glycolysis system is the main source of energy as this process allows a volleyball player to engage in high intensity activity for 1-3 minutes after the previously discussed system, ATP-PC. This energy system takes place in the cytoplasm of the cell. This energy system involves 11 separate reactions to breakdown, which results in the anaerobic lasting longer than ATP-PC. The energy release is significantly slow but enables individuals to extend their energy slowly, which is why this energy system lasts longer than the ATP-PC. These individuals have the ability to perform at high intensity speeds and at the same time exert a great force, which is perfect for volleyball players.

The third energy system is the Aerobic system, and it is heavily used in volleyball. In a series of play (multiple sets, best of three), players will have a high intensity anaerobic burst, followed by recovery. In volleyball, it is essential for players to be able to create a high level of anaerobic power quickly, then be able to recover and repeat. Aerobic exercises generally consist of low-intensity activities performed for long durations (Physiology). This is the case for volleyball, but not too often. Volleyball is a very high intense game, but within the game there are times when it's not too intense. An example of this is when receiving a serve, it doesn't involve too much running, just a simple pass. And this does last for long durations because serves are happening

after the end of every rally, and a rally usually ends within 2 minutes.

Not all energy systems are used by every sport/game, but volleyball is one of those sports, which is why I believe volleyball is one of the best sports to play. Using all three energy systems, your body is continuously getting the exercise as well as keeping a fresh mind. The three energy systems work together to ensure that there is continuous supply of energy for our everyday activities. Each system differentiates how they produce ATP at different speeds from different sources. Volleyball requires very short intense exercises as well as light prolonged exercises. Throughout each and every second of these exercises, all three energy systems make a contribution (Physiology).

Volleyball player spiking Differentiating between three types of energy systems

F.I.T.T Principle of Training

F.I.T.T stands for frequency, intensity, time, and type. The purpose of this principle is for individuals to help them create a workout plan that will be effective to reach and fulfill fitness goals (Richard, 2020). The four elements are what needs to be taken into consideration to create workout that fit your fitness level and goals. The FITT principle can be applied to any workout at any time. This principle has many benefits such as weight loss, fitness maintenance, increase in endurance, and many more. FITT enables one to push their limits, and at the same time prevent injuries or harming one's body. This principle also decreases the likelihood of developing conditions such as obesity, diabetes, etc. Exercise also results in your body releasing endorphins, which helps with pain relief. The FITT principle pushes one to fulfill their goals by adapting to your body's needs, producing benefits as time goes (FITT Principle).

There are many types of training that can be done, one example of this is called Resistance Training. The frequency of this training is dependent on the individual, but for training which works the whole body, should be done 3-4 times a week, resting every other day. This training is good for when playing volleyball because when playing this sport, almost every joint in your body is used, meaning your whole body comes into play. So, training one's whole body consistently would be very beneficial. Cardio training can also be done for volleyball because it involves lots of running, and if one gets tired easily, he/she's ability to play will not be at the max. Frequency should be often as this training helps overall performance, an athlete should have no problem running consistently. A final example is agility training, and this refers to the ability to start, stop, and change direction quickly. The frequency of this type is also dependant on the person, but ideally once or twice a week would be good (FITT Principle).

Frequency is the first objective of the principle, meaning how often one exercises. Frequency is dependent on factors such as how hard one is working, type of workout, and the goals set. This is relatable to a calendar as one's workout period, and the frequency would be how many times one exercises every week. In the case of volleyball, there are professional volleyball players who play very often, around 4-5 times a week. Whereas one who enjoys playing volleyball, but he/she doesn't make time to play during the week. Volleyball is a very intense sport, so the frequency of this sport is low due to the fact that volleyball can take hours out of your day, and most people don't have the necessities to play so frequently. It is a balance of the stress for the body to adapt to and allowing enough time post-volleyball to heal and recover. There are many

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