Introduction
The regular practice of physical activities brings benefits to the health improving the growing and development of young athletes, though we find various myths about the physical activities practice in the adolescence and countless doubts as to the influence of it on phenomena such as skeletal growing and the biological maturation. The physical activity in this phase is not out of risk, once the bruises in the sport are quite often due to the bone structure and the structures connected to it such as tendons and muscles, which are changing in this phase so they are hurt more easily (VIEIRA et al., 2002).

According to Gallahue and Ozmun (2003), the growing is a continuous process that starts in the conception and just gets to an end at death. It is connected to the age, but does not only depend on it. However, the growing, following Haywood and Getchell (2004), starts within the fertilization and it stops at adult age, about the 20 years. This phase is characterized for meaningful differences between the same chronological age individuals, once this difference is determined by maturation. According to the authors, maturation is caused by changes in the biochemical composition of the cells, leading them to a qualitative advance. Not being necessarily dependent on the increase of its size.

Nevertheless, the corporal growing, chronological age, and physiological maturation are related with one another and this way the adolescent tends to grow in size and then improve as to gets older. Various motives are responsible for happening the lesion onto the athletes. According to Whiting and Zernicke (2001), the lesion is a sorrowful occurrence in the everyday life, once it is a harm that is caused by physical trauma that the corporal tissues had, occurring the loss of the normal functions and followed by inevitable physical and emotional costs.

The biomechanics of the sports studies the strengths and their effects on human beings, when they are practicing sportive modalities. The goal of the sports biomechanics is getting athletes’ performance improved, as the demand of a determined modality may be one of the responsible for the lesions. Sports professionals, through biomechanics knowledge, can identify the strength that would be causing the lesion, so preventing and enhancing the rehabilitation with specific exercises (McGINNIS, 2007).

Once we know the sports practice leads to inevitable traumas (lesions) and biomechanics unbalance, a research with youngsters was started at sports municipal centers in Jacarezinho city. The Physical Education and Physiotherapy State College of Jacarezinho has set up connection with the Education, Culture and Sports Office, by the Sports Municipal Department of Jacarezinho, effecting the orthopedic, traumalogic and sportive physiotherapy project that helps the athletes of these centers. This project acts on the prevention and treatment of joining unbalances, traumas, lesions, and maladjusted postures that can bring deviations to the young athletes’ biomechanics function.

The Prevention Programs can help the sportive practice to enhance its benefits to the athletes’ health and minimize the occurrence of lesions (ELLENBECKER, 1992; WILK et al, 1993).

This article has as a goal to compare the most common lesions presented by the athletes on the biomechanics of the practiced modalities, taking into consideration maturation, growing, training period, and their interferences into these young athletes’ health.

Methodology
This research is a transversal study of field accomplished with 176 athletes aged between 6 and 17 years and both male and female, volunteers, with standard average and deviations. The participant athletes of the research were grouped according to the sportive modality and sex: 43 athletes of male futsal and 12 female futsal, 73 male soccer, 15 male basketball, and 12 female basketball, and 21 female volleyball of the Sports Municipal Centers of Jacarezinho.

A questionnaire by Baptista et al. (1999) was adapted and applied, and soon a physiotherapist evaluation individually, containing identification, clinic anamnese, physical examination as inspection, anthropometrics measures, measurements, perimeter (perimetria), muscle strength, mobility test, postural assessment, among others.

The evaluations were applied in the year of 2007, in the Physical Education and Physiotherapy State College buildings of Jacarezinho (UENP). And the data were worked in Excel 2007.

It was also accomplished analyses of the postural alterations and compared to the phase of the athletes’ maturation and growing. The signs of lesions gotten in the activities above cited were also arranged in columns, and compared to the biomechanics of the physical activity.

Despite all of this work, we limited ourselves to verify the lesions reported by the athletes at the clinic anamnese, considering lesion the report of pain on some corporal segments nearly diary and that in any way disturb their performance in the trainings and also in their personal lives.

Results
Of the 176 evaluated athletes 68 % reported lesions, with minimum age of 6 and maximum of 17 years as presented in the table 1. The respective averages and standard deviations are: male athletes 131: age 13 (2), height 158 cm (15), weight 37 kg (9), and training period of 20.5 months (13); female athletes 45: age 13 (2), height 152 cm (7), weight 49 kg (8), and training period 19.4 months (23), according to the table 2.

The most common lesions reported by the young athletes were: in the male futsal, 36% knee and 37% lumbar column; in the male soccer, 50% lumbar column and 40% knee and 33% ankle; in the female futsal, 37% knee and 25% lumbar column; in the female volleyball, 24% knee and 24% breast column; and in the female basketball, 37% ankle and 25% wrist, according to the table 3.
Discussion

Futsal is a modality practiced a lot all over the world, chiefly in Brazil that counts more than 12 million of adepts according to the Futsal Brazilian Confederation. And it is supposed that is the modality that causes the most lesions in the world, twice more than soccer. This may be due to the difference between floors, and the size of the field, that leads a high speed on the moves (JUNGE et al., apud RIBEIRO e COSTA, 2006). However, studies have been showing that the most common lesions are on the thigh, leg, and ankle (RIBEIRO E COSTA, 2006), agreeing partially with findings by Ribeiro et al. (2003), that point out the segments foot/ankle, knee and thigh.

Through this study, we can see that the most common lesions in futsal, as female, as male they were on the knee (male 36% and female 37%) and on the lumbar column (male 37% and female 25%).

Ribeiro et al. (2003) carried out a research with 50 male federated athletes of a paulista club of futsal with ages between 9 and 16 years, who practiced futsal, and the most common lesions were on 46% foot and ankle, and 19% knee. The authors conclude that the postural alterations increased the incidence of lesions on the athletes of this study when compared to the control group.

Among sportive modalities practiced in Brazil, undoubtedly, the soccer has the larger number of adepts. So the biomechanics of this modality becomes important in order the professionals can take the proper cares avoiding lesions. Fraccaroli (1981) considers essential study the kick that is the goal of the game, the heading, the holding and goalkeeper's situations. Once that in a match situation, the soccer player must be prepared to move at the most varied positions and that represents a state of unstable and stable balance. These moves make the most common lesions of these modalities are on inferior limbs, chiefly on the ankle and knee (LEITE and CAVALCANTI NETO, 2003).

The results from the most common lesions at the soccer of this study were also a lumbar column (50%) and the knee (40%) as at the futsal. Reminding that the young athletes' team that trains soccer is male only.

Stewien and Camargo (2005) accomplished a survey about occurrence of lesions on the knee with 97 athletes, of what 50 were male and 47 female, players of soccer team of first division of state of Amazonas, on average of ages of 26.7 years for men and 23.5 for female and on training period average of 154 months and 113 consecutively. All of them were first interviewed by the authors and soon examined by the latter what took a month. Of the 97 players 32% of the male one and 23% of the female one had already had any lesion on the knee and 4% of the athletes of both teams male and female had already had hurt both the knees. However, half of these lesions occurred on young athletes and in shorter training period.

According to Sacco et al. (2004), the basketball has become more and more popular in Brazil and being a modality that requires intense and brief efforts they are accomplished in the more varied paces. It is the most lesions sport causer. Of these lesions, the inferior limbs are the most overloaded due to the constant leaps and moves, once the ankle is the most hurt corporal segment. The actions in this modality are of strength and potency, non-cyclical, with rest passive or active (MARQUES JUNIOR, 2004).

The most common lesions in the female volleyball were (24%) on the knee and (24%) on the breast column.

Santos et al. (2005) carried out a study on which they analyzed 14 athletes with average ages of 23.8 years and with a training period on average of 7.7 years, titular one of a male non-professional volleyball team. The athletes were questioned about lesions, taped over the training and measured via acelerometry making blockage and cuts. The authors verified the local and number
of lesions on the athletes, once the sum reached 78 lesions. Finally, the most hurt segments were (22) the ankle and (8) the knee.

The comparison between the lesions happened and the biomechanics of the sport demonstrates that the join of the knee is prepared only to accomplish the axial rotation over the flexibility (HAMIL & KNUTZEN, 1999). Once in the soccer and in the futsal this rotation may occur on the knee in extension, when the foot is fixed on the ground with the thigh rotation, as in the move of the game, passing the ball, throwing it, lateral moves and sudden stops. These biomechanics characteristics also occur over the impact deadening after a cut or blockade in the volleyball and tray or jump in the basketball, also representing risks the ankle join, that in these moves present great instability at the position of planti-flexibility and inversion (KAPANDJI, 2000).

According to the underlying basis of the sports the articular biomechanics can not be enough to support the join which is overcome by the corporal weight added by the gravity action and the leap potency (SMITH et al, 1997), causing lesions for repeated moves or straight traumas suffered by the knees, lumbar column and ankles to the contractures, distensions, inflammations, degenerating processes increasing even more the articular unbalance causing the lesions.

Conclusion

From the gotten results, we can conclude that the each sport biomechanics compares to the lesions mechanism found, being analyzed through the specification of each sport, their underlying basis as to the anatomy, biomechanics, lesion mechanism, and agonist antagonist relations. Considering also straight traumas and the postural alterations made clear by the evaluated athletes' maturation period, growing and postural habits.

Each athlete must be considered individually with all the influences above, assuring the control of the entire variable onto lesion prevention.

This research supports scientific data for a application of a Preventive Physiotherapy Program which has already been applied by Traumologic Orthopedic Physiotherapy and Sportive Project - FAEFJJA in connection to the Sport Municipal Department of Jacarezinho.

Bibliographic References


related lesions by the athletes at clinic anamnese, comparing the averages with the biomechanics of each modality. The sample was considered homogenous analyzing averages and standard deviations male and female respectively: male 131 athletes: age 13 (2), height 158 cm (15), weight 37 kg (9), and training period of 20,5 months (13); female 45 athletes: age 13 (2), height 152 cm (7), weight 49 kg (8), and training period 19,4 months (23). RESULTS: 68% of the athletes had lesions. These lesions: Male futsal, 36% knee and 37% lumbar column; Male soccer, 50% lumbar column and 40% knee; Male basketball, 40% knee and 33% ankle; Female futsal, 37% knee and 25% lumbar column; Female volleyball, 24% breast column and 24% knee; Female basketball, 37% ankle and 25% wrist. CONCLUSION: The found lesions at each sport can be compared to biomechanics and its specification, inasmuch as they can be enhanced by the postural alterations made clear through the period of maturation, growing, and athletes' postural habits assessed. These data may be the base for a Preventive Physiotherapeutic Program improving the quality of life and production of the young athletes.

KEYWORDS: sportive physiotherapy; biomechanics; lesion.

LES BLESSURES DE PLUS GRANDE INCIDENCE DANS Le FOOTBALL, FOOTBALL DE SALON, BASKET-BALL, VOLLEY-BALL ET LEURS CORRÉLATIONS BIOMÉCANIQUES TROUvÉES DANS LES ATHLÈTES D’ÉCOLE MUNICIPAUX DE SPORTS DE JACAREZINHO-PARANÀ

RESUMEN

Las lesiones de mayor incidencia con la biomecánica de las modalidades practicadas por los atletas tomando en consideración la madurez, crecimiento, tiempo de entrenamiento. METODOLOGÍA: Fue realizado un cuestionario y evaluación fisioterapéutica en 176 atletas de las modalidades de fútbol de salón y basket-ball masculino y femenino, un football masculino y un volley-ball femenino de las Escuelas Municipales de Jacarezinho. Se verificaron las lesiones relatadas por los atletas en la consulta clínica, correlacionando los promedios con la biomecánica de cada modalidad. La muestra fue considerada homogénea analizando promedios y desvios normales en sus respectivos resultados: 45 atletas: edad 13 años (2), altura 152 cm, (7), peso 49 kg, (8), y tiempo de entrenamiento 19,4 meses (23). RESULTADO: el 68% de los atletas presentaron lesiones. De estas lesiones: Fútbol de salón masculino, rodilla el 36% y columna lumbar el 37%; Fútbol masculino, columna lumbar el 50% y rodilla el 40%; Básquetbol masculino, rodilla el 40% y tobillo 33%; fútbol de salón femenino, rodilla 37% y columna lumbar 25%; Voleibol femenino, columna torácica el 24% y rodilla el 24%; Básquetbol femenino, tobillo 37% y puño el 25%. CONCLUSIÓN: Las lesiones encontradas en cada deporte se relacionan con la biomecánica y su especificidad, pudiendo ser acentuadas por las alteraciones posturales evidenciadas por el período de maduración, crecimiento y hábitos posturales de los atletas evaluados. Estos datos pueden servir de base a un Programa de Fisioterapia Preventiva en ameliorar la calidad de vida y el rendimiento de los jóvenes atletas.

PALABRAS-CLAVE: fisioterapia deportiva; biomecánica; lesión.

AS LESÕES DE MAIOR INCIDÊNCIA NO FUTEBOL, FUTEBOL DE SALÔN, BASQUETEBOL, VOLEIBOL E SUAS CORRELACÕES BIOMECÂNICAS ENCONTRADAS NOS ATLETAS DE ESCOLINHAS MUNICIPAIS DE DEPORTES DE JACAREZINHO-PARANÁ

RESUMEN

Los programas de prevención pueden ayudan en la práctica deportiva a exacerbar sus beneficios a la salud de los atletas y reducir la ocurrencia de lesiones (ELLENBECKER, 1992; WILK et al, 1993). OBJETIVO: Correlacionar las lesiones de mayor incidencia con la biomecánica de las modalidades practicadas por los atletas tomando en consideración la madurez, crecimiento, tiempo de entrenamiento. METODOLOGÍA: Fue realizado un cuestionario y evaluación fisioterapéutica en 176 atletas de las modalidades de fútbol de salón y basket-ball masculino y femenino, fútbol masculino y voleibol femenino de las Escuelas Municipales de Jacarezinho. Se verificaron las lesiones relatadas por los atletas en la consulta clínica, correlacionando los promedios con la biomecánica de cada modalidad. La muestra fue considerada homogénea analizando promedios y desvios normales en sus respectivos resultados. Destacan lesiones: Futsal masculino, rodilla el 36% y columna lumbar el 37%; Fútbol masculino, columna lumbar el 50% y rodilla el 40%; Básquetbol masculino, rodilla el 40% y tobillo 33%; fútbol de salón femenino, rodilla 37% y columna lumbar 25%; Voleibol femenino, columna torácica el 24% y rodilla el 24%; Básquetbol femenino, tobillo 37% y puño el 25%. CONCLUSIÓN: Las lesiones encontradas en cada deporte se relacionan con la biomecánica y su especificidad, pudiendo ser acentuadas por las alteraciones posturales evidenciadas por el período de maduración, crecimiento y hábitos posturales de los atletas evaluados. Estos datos pueden servir de base a un Programa de Fisioterapia Preventiva en ameliorar la calidad de vida y el rendimiento de los jóvenes atletas.

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