Effects of Weight and Medicine Ball Training on Muscular Strength of Upper Body and Pitching Performance in Baseball Pla

楊明達、詹貴惠

E-mail: 9802847@mail.dyu.edu.tw

ABSTRACT

The purpose of this study was to investigate the effects of 8 weeks weight training or medicine ball training on muscular strength of upper body and pitching performance in baseball players. Twenty-three baseball players aged from 15 ~ 19 were divided into weight training group (WT group, n=8), medicine ball training group (MB group, n=7) and control group (C group, n=8). All subjects sustained the regular baseball training programs during the experimental period. The subjects of WT group and MB group had additional training schedules with barbell or medicine ball three times per week. The throwing distance and pitching velocity of baseball, time of shuttle run as well as the strengths of pectoralis major m., latissimus dorsi m., rectus abdominis m., erector spinae m., left and right external oblique m. of subjects were tested before and after training. Paired t-tests and one-way independent ANOVA were used to compare the variables within and between groups. The results showed that all variables were no significant differences between three groups before training. After training, the strengths of rectus abdominis m. and right external oblique m. in MB group and the pectoralis major m. in WT group were significantly higher than C group ($p < .05$). There were no differences between WT and MB groups after training. Moreover, the baseball throwing distances as well as strengths of pectoralis major m., rectus abdominis m. and erector spinae m. in both WT and MB group were significantly increased ($p < .05$) after training. The strengths of left and right external oblique m. in MB group were also significantly increased ($p < .05$). Furthermore, the baseball pitching velocities of MB group were significantly increased from 115.0±4.8 to 120.0±4.8 km/hr (p

Keywords : medicine ball training ; weight training ; plyometric training

Table of Contents

REFERENCES

一、 中文部分 王洽、李鴻棋 (民92):增強式肌力訓練對大專女子籃球選手彈跳能力之影響。大專體育學刊，5卷1期，231-237頁。 田麥久 (民86):論運動訓練計畫。中國文化大學出版部，45頁。 李雲光、謝素貞、東方介德 (民93):被動反覆衝擊式肌力訓練對中華男籃選手之最大肌力及爆發力之影響。大專體育學刊，6卷1期，235-243頁。 林正常 (民82):運動科學與訓練:運動教練手冊 (增訂二版)。台北縣:銀禾文化事業公司，135、139頁。 林芳英 (民91):籃球運動的增強式訓練對排球選手跳躍力之應用。大專體育，60期，43-45頁。 吳顥照 (民92):複合訓練的理論與應用。中華體育季刊，66期，1-10頁。 陳太正 (民71):田徑運動力學。長白出版社 陳全壽 (民82):速度、肌力、耐力的生理特性及訓練法。論文發表於一九九三年國際運動訓練科學研討會論文集，台中市，國立台灣體育專科學校，13-34頁。 黃榮松 (民82):重量訓練各有關變項的理論與實際。國民體育季刊，22卷2期，73-78頁。 張木山 (民93):不同訓練發法對彈跳能力發展與評估模式之研究。桃園縣:國立體育學院教練研究所博士論文(未出版)，30頁。 張芬華 (民86):跨欄初學者下肢增強式訓練與等張肌力訓練對速度、動力、跨欄成績之影響。大專體育，30期，21-29頁。 張榮顯 (民90):藥球訓練操作。中華民國大專院校九十年度體育學術研討會暨2001年國際運動教練科學研討會大會手冊 (講師論文集)，台中市，國立台灣體育學院，286-293頁。 鄭景峰 (民91):增強式訓練的理論與應用。中華體育季刊，60期，36-45頁。 二、 英文部分 Baechle, T. R., & Earle, R. (2000). Essentials of strength training & conditioning (2nd ed). Champaign, IL: Human Kinetics, pp. 427-470. Brown, M. E., Mayhew, J. L., & Boleach, L. W. (1986). Effect of plyometric training on vertical jump performance in high school basketball players. The Journal of Sports Medicine and Physical Fitness, 26 (1), 1-4. Chu, D. A. (1992). Jumping into plyometrics. Champaign, IL: Human Kinetics. Conroy, T. R. (1992). Plyometric training & its effects on speed, strength, & power if intercollegiate athletes. Chimera, N. J., Swanik, K. A., Swanik, C. B., & Straub, S. J. (2004). Effects of plyometric training on muscle-activation strategies and performance in female athletes. Journal of Athletic Training, 39 (1), 24-31. Cordasco, F. A., Wolfe, I. N., Wootten, M. E., & Bigliani, L. U. (1996). An electromyographic analysis of the shourder during a medicine ball rehabilitation program. American Journal of Sports Medicine, 24 (3), 386-392. Diallo, O., Dore, E., Duche, P., & Van Praagh, E. (2001). Effects of plyometric training followed by a reduced training programme on physical performance in prepubescent soccer players. Journal of Sports Medicine and Physical Fitness, 41 (3), 342-348. Faigenbaum, A.D., Loud, R.L., O'Connell, J., Glover, S., O'Connell, J., & Westcott, W.L. (2001). Effects of different resistance training protocols on upper-body strength and endurance development in children. Journal of Strength and Conditioning Research, 15 (4), 459-465. Fowler, N. E., Trzaskoma, Z. W., Wit, A., Iskra, L., & Lees, A. (1995). The effectiveness of a pendulum swing for the development of leg strength & counter-movement jump performance. Journal of Sports Sciences, 13, 101-108. Kritpet, T. T. (1989). The effects of six weeks of squat & plyometric training on power production. Unpublished master ’ s thesis, Oregon State University. Lundin, P. (1985). A review of plyometric training. National Strength and Conditioning Association Journal, 7, 69-74. Luebbers, P. E., Potteiger, J. A., Hulver, M. W., Thyfault, J. P., Carper, M. J., & Lockwood, R. H. (2003). Effects of plyometric training and recovery on vertical jump performance & anaerobic power. Journal of Strength and Conditioning Research, 17 (4), 704-709. Maffiuletti, N. A., Dugnani, S., Folz, M., Di Pierno, E., & Mauro, F. (2002). Effect of combined electrostimulation & plyometric training on vertical jump height. Medicine and Science in Sport and Exercise, 34 (10), 1638-1644. Masamoto, N., Larson, R., Gates, T., & Faigenbaum, A. (2003). Acute effects of plyometric exercise on maximum squat performance in male athletes. Journal of Strength and Conditioning Research, 17 (1), 68-71. Matavulj, D., Kukolj, M., Ugarkovic, D., Tihanyi, J., & Jaric, S. (2001). Effects of plyometric training on jumping performance in junior basketball players. Journal of Sports Medicine and Physical Fitness, 41 (2), 159-164. McLaughlin, E. J. (2001). A comparison between two training programs & their effects on fatigue rates in women. Journal of Strength and Conditioning Research, 15 (1), 25-29. Murphy, A. J., & Wilson, G. J. (1996). Poor correlations between isometric tests & dynamic performance: relationship to muscle activation. European Journal of Applied Physiology and Occupational Physiology, 73 (3 – 4), 353-357. O ’ Bryant, H. S. (1985). Roundtable: Determining factors of strength-part Ⅱ. National Strength and Conditioning Association Journal, 7, 10-17. Spurrs, R. W., Murphy, A. J., & Watsford, M. L. (2003). The effect of plyometric training on distance running performance. European Journal of Applied Physiology, 89 (1), 1-7. Stockbrugger, B. A., & Haennel, R. G. (2001). Validity and reliability of a medicine ball explosive power test. Journal of Strength and Conditioning Research, 15 (4), 431-438. Toumi, H., Best, T. M., Martin, A., F'Guyer, S., & Poumarat, G. (2004). Effects of eccentric phase velocity of plyometric training on the vertical jump. International Journal of Sports Medicine, 25 (5), 391-398. Wathen, D. (1994). Rest periods. In T. R. Baechle (ed.). Essentials of strength training & conditioning. Human Kinetics Publishers: Champaign, IL, U. S. A, pp. 451-454. Wilkerson, G. B., Colston, M. A., Short, N. I., Neal, K. L., Hoewischer, P. E., & Pixley, J. J. (2004). Neuromuscular Changes in Female Collegiate Athletes Resulting From a Plyometric Jump-Training Program. Journal of Athletic Training, 39 (1), 17-23. Wilson, G. J., Newton, R. U., Murphy, A. J., & Humphries, B. J. (1993). The optimal training load for the development of dynamic athletic performance. Medicine and Science in Sports and Exercise, 25 (11), 1279-1286. Witzke, K. A., & Snow, C. M. (2000). Effects of plyometric jump training on bone mass in adolescent girls. Medicine and Science in Sports and Exercise, 32 (6), 1051-1057.