

Editors:
Ade Gafar Abdullah
Asep Bayu Dani Nandiyanto
Dian Budiana
Cep Ubad Abdullah

Integrating Science and Technology in Developing Sport and Physical Education

Proceedings of The 2nd International Conference on Sports
Science, Health and Physical Education (2nd ICSSHPE)
October 18-19, 2017, Bandung, Indonesia

Organized by:



Faculty of Sport and Health Education
Universitas Pendidikan Indonesia

ICSSHPE 2017

Proceedings of the
2nd International Conference on Sports Science,
Health and Physical Education

Bandung - Indonesia

October 18 - 19, 2017

Organized by
Faculty of Sport and Health Education, Universitas Pendidikan Indonesia

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Edited by Ade Gafar Abdullah, Asep Bayu Dani Nandiyanto, Dian Budiana and Cep Ubad Abdullah

Printed in Portugal

ISSN: 2184-2701

ISBN: 978-989-758-317-9

Depósito Legal: 441903/18

<http://icsshpe.conference.upi.edu>

icsshpe@upi.edu

BRIEF CONTENTS

INVITED SPEAKERS	IV
ORGANIZING COMMITTEES	V
PROGRAM COMMITTEE	VI
FOREWORD	VII
CONTENTS	IX

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- Mohammad Zaky**, Faculty of Sport and Health Education, Universitas Pendidikan Indonesia, Indonesia

FOREWORD

The 2nd International Conference on Sports Science, Health, and Physical Education (ICSSHPE) 2017 is hosted by the Faculty of Sport and Health Education, Universitas Pendidikan Indonesia, Indonesia. The conference was conducted on October 18-19, 2017 at Grand Tjokro Hotel, Bandung, Indonesia. Promoting “Integrating Science and Technology in Developing Sport and Physical Education” as its theme, the ICSSHPE 2017 is a platform for sport and physical education experts and practitioners to exchange their ideas and findings of each field particularly in relation to science and technology integration.

The conference consists of plenary and parallel sessions. Four experts deriving from four different countries with a variety of expertise are invited to speak the plenary session. In the meantime, participants from all over world attend the plenary session prior to presenting and discussing their papers in the parallel session. More than 200 papers have been rigorously reviewed and later published in the conference proceedings. Thus, the dissemination of topics and fields in the conference is expected to go broadly.

We would like to thank the organizing committee for the commitment and the members of reviewers for their kind assistance in reviewing the papers. We would also like to extend our gratitude to the keynote speakers for sharing their knowledge and experiences in the conference.

Ade Gafar Abdullah

Universitas Pendidikan Indonesia, Indonesia

Asep Bayu Dani Nandiyanto

Universitas Pendidikan Indonesia, Indonesia

Dian Budiana

Universitas Pendidikan Indonesia, Indonesia

Cep Ubad Abdullah

Universitas Pendidikan Indonesia, Indonesia

CONTENTS

PAPERS

FULL PAPERS

Influence of Fatigue on Balance and Lower Limb Muscles Activity in Flatfoot Children <i>Riza Adriyani, Tommy Apriantono and Suprijanto Suprijanto</i>	5
Psychological Characteristics of Indonesian Martial Sports Athletes SEA Games 2017 <i>Fadli Dongoran and Dimiyati Dimiyati</i>	12
Learning Media and Music Model in Improving Characters and Learning Achievement Pencak Silat Movement <i>Iis Marwan</i>	18
Physical Education Teachers' Interpretations of Teaching Games for Understanding Model <i>Soni Nopembri</i>	24
Development of a Coffee Table Book on Kapampangan Games <i>Kelly Jabuen Semsem, Ian Christian Romero Castro and Paul Oliver Gangcuangco Pili</i>	30
Developing Tutorial Video of Karate Basic Technique (Kihon) <i>Sukendro Sukendro and Fitri Ayu Syahrta</i>	37
ABC Running Exercise in Increasing VO2 Max on Students of Football Extracurricular on Secondary High School <i>Arif Hidayat</i>	42
Influence of Ballistic Weight Training and Ballistic Functional Training to the Increase of Strength, Speed, Agility and Power on Lower Extremity Body <i>Sumardi Sumardi, Hari Setijono and Edy Mintarto</i>	47
Development Learning Model Variation Techniques of Volley Ball Services Using Visual Audio Media <i>Hartati Hartati, Silvi Aryanti and Achmad Roby Khadafi</i>	53
Performance Assessment for Physical Education <i>Tomoliyus Tomoliyus and Yustinus Sukarmin</i>	59
Analysis of Maternal Behavior in the Prevention of Pneumonia in Children Using WHO Behavioral Determinant Approach <i>Ilya Krisnana, Ika Nur Pratiwi and Ni Kadek Dwi Kristiani</i>	65
Jump Serve on Volleyball Survey <i>Muhamad Sazeli Rifki and Syafrizar Syafrizar</i>	71
The Effect of Skillastics Game on the Elementray School Students' Social Skills <i>Syam Hardwis</i>	76
The Think Pair Share (TPS) Learning Model in the Behavior of Healthy School Snack Selection of School Age Children <i>Kusnanto Kusnanto, Praba Diyan Rachmawati and Ni Komang Wepiyanti</i>	80

Perception of Foreign Coach and Athletes about a Volleyball Competition <i>Sujarwo Sujarwo and Putut Marhaento</i>	87
Can “Parachute Game” Improve the Emotional Intelligence of Deaf Students? <i>Linggi Andiri, Frengky Yudis Prasetyo and Ganjar Garniadi</i>	92
The Psychological Characteristics of the Indonesian SEA Games Athletes in the Measurable Sport <i>Ipa Sari Kardi and Dimyati Dimyati</i>	97
Genetic Counseling to Reduce the Level of Depression in Parents of Children with Thalassemia Major <i>Henri Setiawan, Annastasia Ediati and Tri Indah Winarni</i>	102
Weight Loss in Pencak Silat Fighting Category <i>Ramdan Pelana</i>	107
Weight Loss in Pencak Silat Art Performance Category <i>Yasep Setiakarnawijaya</i>	111
Contribution of Arm Muscle Strength and Flexibility to Result in Radslag on Physical Education Students <i>Daharis Daharis and Ahmad Rahmadani</i>	114
Increasing Participation in Recreation Sports Using the PAKTIF Model <i>Luqmanul Hakim, Toho Cholik Mutohir and Muhammad Muhyi</i>	119
The Relationship between Physical Fitness and Academic Achievement in Physical Education, Sport, and Health <i>Wahyu Indra Bayu and Puguh Satya Hasmara</i>	124
Anthropometric Measurements, Physiological and Biomotoric Test to Identify Talented Basketball Athletes <i>Ritoh Pardomuan, Toho Cholik Mutohir and Nining Widyah Kusnanik</i>	129
Paradigm Shift in Pencak Dor Traditional Sport <i>Wasis Himawanto, Toho Cholik Mutohir and Made Pramono</i>	134
Volleyball Smash Skills <i>Dindin Abidin</i>	139
Identification of Art Activity Futsal Run at Professional Futsal League in Indonesia <i>Mohammad Faruk, Hasbi Hamanatul Arsy and Abdul Hafidz</i>	144
Profile of Physical Education Program Students Candidates <i>M. E. Winarno and Taufik Taufik</i>	148
Development of Volleyball Course Scoring Instrument for Students <i>Dona Sandy Yudasmara and Fadhli Fadhli</i>	153
Physical Activity for the Blind from the Principal’s Perception <i>Akhmad Olih Solihin and Berliana Berliana</i>	158
Comparison of Shooting Accuracy between Dominant and Non-Dominant Leg among Indonesian Soccer School Players <i>Saharuddin Ita and Pahala Tua Hutajulu</i>	163
Comparison of Extensive and Extensive Interval Exercises in Futsal VO2max Player Upgrades <i>Kartono Pramadhan and Dedi Supriadi</i>	168

The Identification of Talents in Coastal Areas <i>Ngadiman Ngadiman, Suko Wahono and Munasib Munasib</i>	174
The Improvement of Maximum Speed Phase of 100 meter Sprint <i>Raja Syaifullah Sihombing and Agung Sunarno</i>	178
Vital Capacity and Haemoglobin Level in Correlation with Endurance of Adolescent Football Athlete <i>Asep Prima</i>	183
Correlation of Energy Intake, Sex and Physical Activity with Fat Mass in Stunting Teenagers <i>Ginna Megawati, Dewi Marhaeni Diah Herawati and Siti Nur Fatimah</i>	188
Teaching Children Sepaktakraw through the Cart Sepaktakraw Game <i>Abdian Asgi Sukmana, Toho Cholik Mutohir and M. Muhyi Farough</i>	193
The Influence of Application of the Sport Education Learning Model in Improving Volleyball Playing Skills <i>Ervan Kastrena and Edi Setiawan</i>	198
The Impact of Sport Co-Curricular and Internship on Social Skill <i>Narwikant Indroasyoko, Adang Suherman, Yudy Hendrayana and Dede Sujana</i>	202
Development of Trekking Sports Based on Local Wisdom in Supporting Tourism Sport Industry <i>Syarif Hidayat, Toho Cholik Mutohir and Made Pramono</i>	207
Effect of Aerobic and Anaerobic Physical Exercises to Brain Derived Neurothropic Factor Plasma Levels on Mice <i>Iyakrus Iyakrus, Rostika Flora and Januar Ikhsan</i>	211
The Effect of Mass Media on Achievement of Indonesian Badminton Athletes <i>Ika Novitaria</i>	215
Application of Water-Playing Methods to Increase Confidence in Mentally Retarded Children at Special Education Laboratory <i>Nofi Marlina Siregar and Dinti Oktaviani Haerudin</i>	219
The Contributing Factors to Athletes' Achievement in Archery <i>Kuswahyudi Kuswahyudi</i>	223
The Role of Rubber Resistant against Swimming Breaststroke 25 Meters <i>Ani Pristiawati, Sriningsih Sriningsih and Akhmad Olih Solihin</i>	227
Character Building Values in Sports Development <i>Herita Warni and Ramadhan Arifin</i>	231
Outdoor Education on Students' Objectives and Responsibilities <i>Dede Iman Suhendra, Nurlan Kusmaedi, Amung Ma'mun and Yusup Hidayat</i>	235
Teaching Personal Social Responsibility and Cooperative Learning Models on the Students Responsibility in Physical Education <i>Dupri Dupri and Rices Jatra</i>	239
Contribution of Intelligence and Physical Condition on the Punch and Kick Pencak Silat <i>Aridhotul Haqiyah and Dani Nur Riyadi</i>	243

The Effects of Red Fruit Extract Supplementation on Blood Lactate Concentration after Sub-Maximal Exercise <i>Pahala Tua Hutajulu and Yohanis Manfred Mandosir</i>	247
Implementation of Outdoor Education on Critical Thinking Ability <i>Vicki Ahmad Karisman</i>	251
Effect of Method of Teaching and Learning Motivation toward Skills Freestyles Swimming 25 meter <i>Asep Sujana Wahyuri, James Tangkudung and Sayuti Syahara</i>	255
Correlation between Power of Limb Muscle with Smash Skill Kedeng on Sepaktakraw <i>Hasan Hasan and Fahrizal Fahrizal</i>	259
The Effect of High and Low Glycemic Index Menu on the Endurance Performance of Football Player <i>Wilda Welis, Khairuddin Khairuddin and Elsa Yuniarti</i>	263
Anxiety Instrument Application on Water Ski Athletes who had Experienced Injury <i>Juriana Juriana and Kurnia Tahki</i>	267
Effect of Aqua Noodle on Butterfly Swimming <i>Sriningsih Sriningsih, A. O. Solihin, A. Pristiawati and H. Ilmawati</i>	274
The Effect of Sport Education Model (SEM) and Conventional Learning Model on the Active Learning Time <i>Nana Sutisna, Adang Suherman, Amung Ma'mun and Mulyana Mulyana</i>	277
Improving Physical Activity of Students with Low Fundamental Movement Skills Using Sport Education Model <i>Agi Ginanjar and Adang Suherman</i>	280
Physical Condition in the Performance Aspect of Seoi Nage Throwing Technique <i>Memet Muhamad</i>	283
Physical Condition Evaluation of Young Athletic Athletes <i>Burstiando Rizki</i>	286
Correlation between Emotional Quotient (EQ) and Achievement Motivation on Pencak Silat Achievement <i>Hilda Ilmawati, Adang Suherman, Lasrina Lasrina, Stephani Stephani and Friskawati Friskawati</i>	289
Physical Activity: Sports which are Done by Elders <i>Anang Setiawan and Seni Oktriani</i>	292
The Influence of Exercise Motivation and Motor Ability towards the Table Tennis Playing Skills <i>Eneng Fitri Amalia, Herman Subarjah and Indra Safari</i>	295
The Effectiveness of the Implementation of Outbound for Kids in Developing Child Character <i>Wahjoedi Wahjoedi, I Putu Panca Adi and I Putu Darmayasa</i>	305
Development of Instructional Model Enterprise-based Problem Based Learning in Sport Science Program of Faculty of Sport Science <i>Gusril Gusril and Apri Agus</i>	315
Performance Profiling of Philippine Normal University Basketball Male and Female Athletes <i>Aquilino Eduardo P. Santos</i>	322

The Effect of Menstrual Cycle Phases on Vertical Jump Kinematics and Kinetics in Elite Athletes <i>Ruaibah Yazani Tengah, Ashril Yusof and Abd. Halim Mokhtar</i>	334
Academic Achievement and Athletic Performance of Freshmen Athletes in the Special Program for Sports of the Philippine Normal University Academic Year 2013–2014 <i>Rosanna A. Diana</i>	341
Students' Motivation Profiles as Predictors of Physical Activity Participation <i>Jonar Tumali Martin, Michael E. Santos and Joel G. Tubera</i>	349
Comparative Analysis on the Motivation for Dancing of Male and Female Students <i>Regina Adriano Baligad and Jonar Tumali Martin</i>	354
The Filipino Learner - Physical Attributes <i>James V. Bailon and Lordinio A. Vergara</i>	359
Motivation in Physical Education among Filipino High School Students <i>James V. Bailon, Erwin M. Blancaflor, Ma. Joannes Kevin B. Datu-Puda, Karen Jade Dabu, Romeo R. Rioflorido and Jonathan Cagas</i>	364
Correlation of Physical Activity and Social Media Use of Students <i>Jonar Tumali Martin, Elizabeth M. Acampad, Regina A. Baligad, Anatalia E. Larce and Michael E. Santos</i>	370
Level of and Perceived Barriers to Physical Activity in a Sample of College Sophomores <i>Anatalia Endozo-Larce, Regina Adriano-Baligad and Elizabeth Manalo Acampado</i>	375
Motivational Correlates for Physical Education Class Participation of College Students <i>Jonar Tumali Martin</i>	380
Scientific Approach in Physical Education - Is it able to Improve Concentration and Spatial Intelligence of Junior High School Students in the Coastal Area? <i>Beltasar Tarigan</i>	385
Fundamental Movement Skills and Game Performance in Invasion Game Activities <i>Ricky Wibowo, Eka Nugraha and Kuston Sultoni</i>	390
Teaching Physical Education Based on Self-Management Skill - Developing the Active Lifestyle, Physical Activity Level and Physical Fitness on College Students <i>Didin Budiman, Ricky Wibowo and Gano Sumarno</i>	396
Effort to Improve Student Fundamental Locomotor and Manipulative Skills through the Application of Movement Education <i>Wulan Purnamasari and Suherman Slamet</i>	401
Application of Modified Basketball Game Against Understanding Playing Basketball <i>Lukmannul Haqim Lubay and Destri Hardiyani</i>	409
The Validity and Reliability of Arrowhead Agility Test in Football <i>Dudung Hasanudin Chalil, Mona Fiametta Febrianty and Hadi Sartono</i>	414
Developing Life Skills through Cooperative Learning Models in Aquatic Activities <i>Hendi Suhendi, Ricky Wibowo and Nova Kania</i>	418
Decreasing Physical Condition and Performance of Swimming Athletes <i>Beltasar Tarigan, Restu Pratiwi and Rina Ambar Dewanti</i>	423

Menstrual Cycle - Does it Influence the Anxiety and Confidence of the Swimming Athletes? <i>Beltasar Tarigan, Restu Pratiwi and Rina Ambar Dewanti</i>	426
Scientific Approach in Physical Education - Can it Improve Concentration and Spatial Intelligence of Senior High School Students in the Mountainous Area? <i>Beltasar Tarigan, Herman Subarjah, Kurnia E. Wijaya and Iqbal Gentar Alam</i>	429
Decision Making of Football Referee and Assistant Referee in Liga 1 Indonesia <i>Mochamad Yamin Saputra, Sagitarius Sagitarius and Alen Rismayadi</i>	435
Impact of HIIT Exercise Methods on Improving the Ability of Anaerobic and Aerobic Capacities of Female Futsal <i>Dikdik Jafar Sidik and Asep Sumpena</i>	440
Students Knowledge about Handling Sport Injuries <i>Suci Tuty Putri, Sri Sumartini, Afianti Sulastri and Lulu Nurfatin</i>	446
Athletes' Knowledge on The Nurses' Role in Sports Injury Treatment <i>Upik Rahmi, Septian Andriyani and Budi Somantri</i>	450
The Shift of Female Martial Artists Depression Level Resulting from Pre-Menstrual Syndrom Effect <i>Berliana Rahely</i>	453
Brain Jogging Exercise and Team and Individual Sports Athletes' Concentration <i>Komarudin Komarudin</i>	456
The Influence of Ideas Exercise Model and Physical Fitness on Badminton Playing Skills <i>Herman Subarjah</i>	460
West Javanese Judo Athletes' Physical Conditions <i>Ira Purnamasari</i>	466
Building Sport Student Self-Esteem in Learning Statistics through SRLE - Statistical Reasoning Learning Environment <i>Nidaul Hidayah, Wahyudin Wahyudin, Turmudi Turmudi and Dadan Mulyana</i>	470
Revealing the Mental Toughness of the Fighter of Paguron Manderaga <i>Mulyana Mulyana and Agung Prayoga</i>	476
Quality of Life of West Java Paralympic Athletes <i>Sufyar Mudjianto, Eka Nugraha, Arif Wahyudi and Muhammad Ihsan</i>	482
Energy Bars with Curcumin Content Increase Human Performance <i>Hamidie Ronald Daniel Ray, Abdullah Firmansah and Rita Patriasih</i>	486
The Effect of Consumption of Palm Sugar on Cardiovascular Endurance and Lactic Acid <i>Hamidie Ronald Daniel Ray and Muhammad Naufal Abdulrahman</i>	490
Differences of "Menarche" Viewed from Geographical Location <i>Nina Sutresna, Mona Fiametta Febrianty and Lilis Komariyah</i>	494
Effect of Tool Modified "Smarter Spotter" on Students' Performance in Bridge Motion <i>Galih Permana, Madya Madya and Putranto Putranto</i>	499
How to Improve Drive Stroke Result in Squash Game? <i>Finaldhi Palgunadhi, Muhammad Zakiy Muflih, Habibi Abdillah and Iman Imanudin</i>	503

Jump Serve on Volleyball Survey

Muhamad Sazeli Rifki and Syafrizar Syafrizar

Departement of Health and Recreation Universitas Negeri Padang, Indonesia

msr_rifki@fik.unp.ac.id

Keywords: Jump Serve Skill, Elasticity, Arm Muscle Explosive Power, Self-Confidence, Volleyball Athlete.

Abstract: The jump serve skill is still one of the problems faced by west sumatera volleyball athletes. This is seen I the results of the pre PON game in 2015 in sumatera where 35% of athletes did jump serve and the level of failure in getting point was still 50%. There are several factors that ellegedly affects the skill of jump serve; elasticity, explosive power of arm muscle and self-confidence. The purpose of this research is to find out: causal relationship between endogenous variable, that is jump serve skill (Y), intervening variable that is self confidence (X3). And two exogenous variables, namely the elasticity (X1) and arm muscle explosive power (X2). The Method applied was survey method This research was analyzed by path analysis technigue (Path Analysis) The population was all volleyball athletes of west sumatera. Data on elasticity were collected using a bridge-up test, arm muscle explosive power was taken with overhead test of medicine ball throw, self confidence data were taken with questionnaire and jump serve skill was taken with precision test, speed and quality of jump serve (judge) technique. The results of this study conclude tht: (1) Elasticity directly affects skill serve ($py1 = 0,315$); (2) The arm muscle explosive power directly affects the skill of jump serve($py2 = 0,534$); (3) Self confidence directly affects skill serve ($py3 = 0,310$); (4) The elasticity directly affects the arm muscle explosive power ($Px21 = 0,288$); (5) Elasticity directly affects self confidence ($P31 = 0.264$); (6) The arm muscle explosive power directly affects the self confidence. ($P32 = 0.271$). As an effort to improve the skill of jump serve, it is necessary to consider the dominant factor (the path coefficient is greater).

1 INTRODUCTION

Exercise is one means of human self-development, through sports can improve performance. Bolavoli has become a very popular sport by the world community, especially the people of Indonesia. The facts prove that the bolavoli is currently ranked second in the most popular row of sports, after football. No wonder if the game that uses this hand is played almost by all circles.

One of the most dramatic skills in modern volleyball is the spike serve, or jump serve, which provides an interesting and dynamic skill for both the player and the spectator, that the jump serve is one of the weapons to get the first number in a game of bolavoli and ultimately victory. In order to master jump serving skills, it needs to be supported by physical, technical and mental abilities.

Volleyball requires a physical element to support a player's performance. Sajoto (1995: 10) As for the physical elements in question include: strength, endurance, speed, kelentuk, agility, balance, accuracy, reaction, explosive power and coordination. According to Rusli Lutan (2001: 25) to perform a player jumphing service requires

coordination, where coordination is the ability to perform movements with various levels of difficulty quickly and efficiently with full precision. Coordination is required from the prefix, repulsion, while hitting to the ground. In other words by having motion coordination and supported with good reargood formation, then the jump serve that dillakukan will perfect the result as expected and the required for the effectiveness of the movement.

As for the physical capabilities that support in the success is the power of explosion (power) which is a combination of elements of speed and strength that will generate explosive power capabilities in jumps and blows, it is seen in the implementation of the jump serve, which required a high vertical upward jump of muscle power limbs so the point of reach for hitting the ball is higher and when touching the ball with the ball requires muscle power of the arm so that the hit ball falls on the opponent's field with a strong and fast as well as the ball that hit the top and produces a falling ball dive as it is hit at the highest part of the jump.

Another factor an athlete should have at a jump serve is the confidence. Sudibyo (2001: 86) states that confidence if he is able and able to achieve certain achievements; if the achievement is high then the

individual concerned more confident. This means that the higher the level of confidence the athlete will be more confident that the athlete will do the jump serve as expected. The high self-esteem of the athlete, of course, has a tendency to be self-controlled and can place anxiety that emerges as a signal to be careful, concentrated, and try to display the best serve, ultimately with confidence and concentration. both related to confidence when doing a jump serve.

Jump serve done by West Sumatra volleyball athlete percentage is still an average of 35% in every game and 50% failure in every game. This can be seen from the implementation of the jump serve performed, where the jump serve is not in accordance with the intended direction or target, this factor is pointed to some weak points, among others: arm muscle explosive power, tolok formation, hand eye coordination and confidence.

Based on the data in the Provincial Board of Volleyball Entire Indonesia West Sumatra, that it has three times the National Sports Week West Sumatra bolavoli team did not qualify and in other national games West Sumatra bolavoli team did not qualify from the pool elimination round. According to the recapitulation of the match report from the coach, the percentage of West Sumatra athletes error in the match is still big on the top serve and jump serve that is 25% from the error of other factors.

The low skill ability of jump serve at bolavoli athletes can also be known from the evaluation of the results of the match so far, where many athletes are rushing to serve so the result is not good, in doing the jump serve the bolavoli athlete is less confident in doing it, whereas in the national level jump match serve is the main weapon or main attack to get numbers. In reality this jump serve has not been used by the team of West Sumatra in the game to get points or points.

Another factor, the athletes can master the material well. Difficulties experienced by athletes in general in the movement. This is probably due to the low physical condition of an athlete determining the skill of the jump serve. This is probably due to the low level of explosive power of the arm muscles, the formation, balance and coordination of the athlete, so the athlete is not perfect in doing the jump serve. In line with research by Sirirat Hirunrat and Onwaree Ingkatecha (2015), the jump serves a powerful offensive action widely used elite players.

Based on the above description, the researcher is interested to examine the factors that influence the jump volleyball skill, ie (1) the flexibility of the joints to move the joints to the back so as to help the movement and power for service, (2) the power of

arm muscle explosion focused on how strength and speed of the ball in service, and (3) confident in service at the point of faith, earnest and responsibility.

The purpose of this study is to determine the causal relationship between endogenous variables, namely skill serve (Y), intervening variable, ie self-confidence (X3). And two exogenous variables, namely the formation (X1), and arm muscle explosive power (X2), which is to obtain empirical data and answer the problems in this research and useful for building science of sports science, especially bolavoli.

2 METHODS

The method used in this research is survey method with causality or study of causal effect among the variables studied. The first variable is endogenous variable, ie skill of jump serve atlet of bolavoli (Y), the next variable is intervening variable, that is confidence (X3). Two other variables belong to the exogenous variables, namely the elasticity (X1), and arm muscle explosive power (X2). This research was analyzed by using statistic, with path analysis technique (Path Analysis). Path Analysis Model is used to analyze the relationship pattern between variables with the aim to know the direct or indirect effect of a set of independent variables (exogenous) to the dependent variable (endogen).

The population in this study is all West Java bolavoli athletes who qualify for the final of West Sumatra Nagari match in 2015 as many as 8 teams totaling 96 men athletes. Sample technique is done by Sampling Purposive is a sample determination technique based on certain considerations that athletes who can perform and often use a jump serve in the game. Together with Bridge Up (Kayang) data, arm muscle explosive power data were taken with overhead test of medicine ball throw, confident data were taken by questionnaire and skill serve jump was tested with accuracy, speed and quality of jump serve (judge) technique.

Data analysis techniques used in this study are as follows: 1) Descriptive statistics, ie statistics assigned only to obtain description or measurements of data in hand, 2) test requirements analysis include: (a) normality test data with Liliefors test; (b) linearity test, 3) the correlation statistic is to give the values for each variable in turn correlated with the values of the complex variables, 4) path analysis to analyze the relationship pattern among the variables.

3 RESULTS AND DISCUSSION

In accordance with the results of this lane coefficient calculation there is no path of influence discarded for $t_{hitung} > t_{tabel}$, as follows: (1) the results of the first hypothesis testing, the coefficient of the direct influence of togok gamut to skill serve serve 0.280 with $t_{hitung} = 2,125$ and t_{tabel} of 1.675. Because the value of t count is greater than t_{tabel} value, then the test result decided to reject H_0 hypothesis. This means that there is a positive influence of the togok formation of the jump serve skill, (2) the result of the second hypothesis testing, the direct path coefficient of arm muscle explosive power to the jump serve skill 0,534 with the t_{hitung} value 4,380 and the table value of 1.675. Because the value of t count is greater than t_{tabel} value, then the test result decided to reject H_0 hypothesis. This means that there is a direct positive effect of arm muscle explosive power on skill serve serve, (3) result of third hypothesis testing, coefficient of direct influence of self confidence to skill serve skill 0,310 with t_{hitung} value equal 2,262 and t_{tabel} value equal to 1,675. Because the value of t count is greater than t_{tabel} value, then the test result decided to reject H_0 hypothesis. This means that there is a positive influence of confidence in the skill of jump serve, (4) the result of the fourth hypothesis testing, the coefficient of the direct influence of the togok's velocity on the arm muscle explosive power of 0.288 with the t_{hitung} value of 2.176 and the t_{tabel} value of 1.675. Because the value of t count is greater than t_{tabel} value, then the test result decided to reject H_0 hypothesis. This means that there is a positive influence of togok formation on the arm muscle explosive power, (5) the result of the fifth hypothesis testing, the coefficient of the direct influence of the togok to the confidence of 0.264 with the value of t_{hitung} 1.896 and the t_{tabel} value of 1.675. Because the value of t count is greater than t_{tabel} value, then the test result decided to reject H_0 hypothesis. This means that there is a positive influence on togok togok to confidence, and (6) the results of testing the sixth hypothesis, the coefficient of the direct influence of arm muscle explosive power to confidence of 0.315 with the value of $t_{hitung} = 2.299$ and t_{tabel} value of 1.675. Because the value of t count is greater than t_{tabel} value, then the test result decided to reject H_0 hypothesis. This means that there is a positive influence of arm muscle explosive power to confidence.

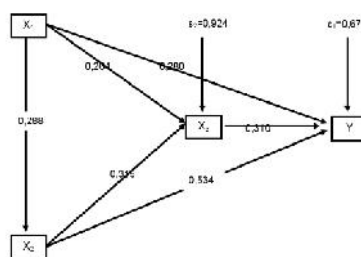


Figure 1: Complete Path Coefficient Research Model

The results of the first hypothesis testing in this study indicate that the gamut of togok has a direct influence on skill serve serve. This gives the meaning that the success of a jump serve one is determined by the formation of togok. If the formation of good athlete athletes, which is implied in the process of implementation of the jump serve then the ball will be the result of a maximum blow and difficult to accept the opponent. This condition will contribute significantly to the successful implementation of the jump serve. Instead jump serve can fail or not maximal if not supported by kelautan togok.

Based on the description it is clear that the formation is one factor that can not be ignored in increasing the speed of motion, this applies also to the jump serve movement in the game bolavoli, where to achieve the speed and coordination of optimal jump serve motion requires good formation. Elements of the required skill at the time of jump serve that is when the player is in the air in the square kicked body ball formed formally and when hitting the ball body bent forward. And the formation is an inseparable part in the improvement of motion skills, thus the ability to influence the outcomes of the jump serve skills on the game of bolavoli.

The results of the second hypothesis testing in this study indicate that the arm muscle explosive power has a direct influence on skill serve serve. This gives meaning that the success of the jump serve one is determined by the explosive power of the arm muscle. If the explosive muscle power of the athlete's arm is good, which is implied in the process of implementation of the jump serve then the ball will hit the maximum result and difficult to accept the opponent. This condition will contribute significantly to the successful implementation of the jump serve. Instead a jump serve can fail or not maximal if it is not supported by arm muscle burst power.

Muscle power factor will work optimally if the strength and speed as a supporting factor also has a good quality. In the jump serve, this explosive power is a dominant factor in the creation of good skills. This is because explosive power acts as a force factor

that forces the object, in this case is our body to move forward. Allegedly the greater force (force) is played by the explosive power, the greater the acceleration made by the body. The greater the acceleration will result in greater body speed and the time yag is quite coupled by a good body balance in the end the power of the punch will be maximal so that an athlete will be easy and flexible in doing a jump serve.

In a crucial jump serve in reaching the ball speed, further explosive power, shoulder and arm core are highly influential and the optimal function of the kinetic chain is an important element. The ability of hip joint motion and thorack vertebrae is also an important factor in the achievement of ball speed (ball velocity) M. Hayrinen et al (2011).

The results of the third hypothesis testing in this study showed that confidence has a direct influence on skill serve serve. This gives the meaning that the success of a jump serve one is determined by self-confidence. If the athlete's self-confidence, which is implied in the process of implementation of the jump serve then requires confidence, concentration, goal setting, mastery of techniques, good self-control so that the maximum results. This condition will contribute significantly to the successful implementation of the jump serve. Instead jump serve can fail or not maximal if not supported by confidence.

In doing a jump serve the self-confidence of a bolavoli athlete will have an effect. This is because if a bolavoli athlete does not have confidence in doing a jump serve then not produced a good jump serve. However, it should be accompanied by regular and ongoing exercises. An athlete who has done the preparation with the exercises to the maximum will have a higher confidence than those who exercise but less than the maximum.

Next Sudiby (2001: 126) self-belief is very important in mental coaching athletes. Believing in yourself will create a sense of security, self-confidence is usually closely related to the "emotional security", the more confident self-esteem is also steady emotional securely, it will be seen in attitude and behavior that is not easy to hesitate, calm, firm and

The results of the fourth hypothesis testing in this study showed that the togok formation has a direct influence on the explosive power of the arm muscles. This means that the formation of togok is one of the factors that determine the ability to increase the explosive power of the arm muscles.

Ability is the ability to perform a series of movements to the maximum extent possible, with a wide range of motion. This should be supported by

the readiness of the parts of the body itself so it is possible to obtain maximum muscle elasticity. Formation is also very big role in the sport bolavoli, because with a high level of kelentukan will be able to streamline the movement, streamline the time and energy as in the time to serve during the game.

The results of the fifth hypothesis testing in this study indicate that the formation has a direct influence on confidence. This means that kelentukan is one of the decisive factors that increase confidence. In contrast, athletes who have a good kelentukan but do not have confidence then the result will not be maximized.

In the implementation of jump serve is strongly supported by several factors including physical conditions, techniques and tactics. Mental factors are decisive once in a match. In other words, these four factors are indispensable for the achievement of the maximum, alleged athletes who have good abilities ability, it will affect from its appearance because an athlete who is ready for physical condition will increase confidence in making decisions in a jump serve on game bolavoli.

This is in line with Tangkudung (2012: 72) that the state of good physical condition will affect psychological aspects in the form of increased work motivation, morale, confidence, thoroughness and so forth. Psychologically, the physical state seems very big influence in the environment of our activities, especially in socializing.

The results of testing the sixth hypothesis in this study indicate that the arm muscle explosive power has a direct influence on confidence. This means that the power of the arm muscle is one of the decisive factors that increase self-confidence. Conversely, athletes who have a large arm muscle explosiveness but do not have confidence then the result will not be maximal.

According to Maksum (2008: 2013) those who are actively engaged in sports activities show a higher level of confidence (self confidence) than those who are not involved and positive self-concept appears not only in the physical, but also social and more impressive dimensions its influence on intellectual development. Based on the above opinion, that active exercise means general good physical condition and relate in terms of trust cirri in acting.

In the implementation of jump serve is strongly supported by several factors including physical conditions, techniques and tactics. Mental factors are decisive once in a match. In other words these four factors are indispensable for the achievement of the maximum, alleged athletes who have the ability of a good arm muscle explosive power, it will affect from

his appearance because an athlete who is ready for physical conditions will increase confidence in making decisions in doing jump serve on the game bolavoli.

Sudibyo (2001: 71) says the successes experienced by an athlete will be able to develop self-confidence, therefore it is very important that athletes athletes have a chance to win and a defeat must not result in a loss of effort to instill self-confidence own.

In conducting a jump serve, a server must be able to think and perform moves quickly and carefully when it comes to deciding where the ball is directed by considering the opponent's defense pattern. So someone who has good coordination of motion helps once an athlete's confidence to complete the task well and in accordance with the intended target, so that jump serve can bring points or numbers.

Implementation of this research has been cultivated carefully based on the systematics and procedures of scientific work in accordance with this type of research so as to deliver results in accordance with the intended purpose. But the perfection of the results is something that is not easily realized this is due to the weaknesses and limitations in this study. Weaknesses and limitations should be presented as a consideration in interpreting and generalizing the results of this study.

4 CONCLUSIONS

Based on testing hypothesis yeng have been disclosed above and result of data analysis hence can be taken conclusion based on result of research finding. The conclusions in this study are as follows: (1) the formation of togok directly affect the skill of jump serve atlet bolavoli West Sumatra. This means that togok kelautan will affect the skill of jump serve atlet of bolavoli of West Sumatra, (2) arm muscle explosion directly influence to skill of jump serve atlet of bolavoli of West Sumatra. This means that the power of arm muscle explosion will affect the skill of jump serve atlet of bolavoli of West Sumatera, (3) confidence directly influence to skill of jump serve atlet of bolavoli of West Sumatra. This means that self-perception will affect the skill of jump serve at West Java bolavoli athletes, (4) the formation of togok has a direct effect on the explosive muscle power of the atlet arm of the bolavoli of West Sumatra. This means that togok kelautan will affect the increase of arm muscle explosive power in the achievement of skill of jump serve atlet of bolavoli of West Sumatera, (5) togok formation have a direct effect to confident atlet of bolavoli of West Sumatra.

This means that the elasticity of togok will affect the confident increase of the bolavoli athletes of West Sumatra, (6) the explosive force of the arm muscle directly affect the self-confident atlet of West Sumatra bolavoli. This means that the power of arm muscle explosion will affect the confidence increase atlet of West Sumatra bolavoli. Furthermore, in order to increase skill of jump serve at bolavoli athlete, aspect of togokiness, muscular arm explosion and confidence need to be attention and can not be ignored, implication like pay attention to factors who influence it, promote appropriate training, work with local governments, bolavoli organizations, coaches, athletes, referees, the elderly and the club in terms of improving the aspects of togok formation, muscular arm power and confidence.

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