

A MODEL FOOTBALL ACADEMY FOR RESIDENTS OF LYARI TOWN, KARACHI, SINDH, PAKISTAN

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ABSTRACT

This paper reviews and analyzes factors contributing to the rise and the fall of football game in Lyari Town. This town has the passion and the talent for football, which should be groomed to produce international players. A model football academy on the pattern of Grêmio (Brazil), Altınordu (Turkey), La Masia (Spain) and INF Clairefontaine (France) is proposed with football-oriented curriculum and international-level-football-training facilities on a green campus. The players are to be inducted at the age of 5 years after rigorous psychological and physical examinations as well as fitness testing. They study and play football here till they pass their Higher Secondary Certificate Examination. Measures are suggested for safety and security at campus as well as use and abuse of controlled substances. A survey was conducted to obtain opinions of footballers, coaches and general public in order to determine causes of decline of football in Lyari. The questionnaire was divided into 3 parts – lack of physical resources, noises influencing football game and shortage of human resources. The responses were indicative of the community's strong feeling that Lyarites can become international- standard footballers, if they are given the infrastructure and the facilities combined with motivation to achieve distinction. The proposed football academy should be the first step to change mindset of Lyarities from indulging in drugs and crime to healthy sport activities.

Keywords: physical examination, psychological examination, sport-centered curriculum, talent hunting, vitamin-D deficiency

Abbreviations

FIFA: Fédération Internationale de Football Association • **PFF:** Pakistan Football Federation • **SPSS:** Statistical Package for the Social Sciences • **WADA:** The World Anti-Doping Agency.

INTRODUCTION

Globalization has influenced sport, in particular, football. The world cup is equally enjoyed by players as well as spectators. Similarly, various national and international tournaments as well as club following

generate excitement in terms of winning and losing with all the emotions and the technicalities associated. Football is believed to be one of the basic games in the world of sport. The residents of Lyari infuse a new wave of

passion towards this game that drive people mad, which needs to be channelized to train the youth to pursue a football career.

This paper looks at the hidden potential of residents of Lyari investigating the factors contributing to the growth and the decline of football in Lyari and proposes a model football academy to discover and to groom talent in this sport.

THE LYARI TOWN

Lyari is one of the earliest towns of Karachi, the cosmopolitan city and the main seaport of Province of Sindh, Pakistan. Its name originated from the river Lyari that streamed past this region into the Arabian Sea. Riverbed of Lyari River extends from Liaquatabad Town to Karachi Port. There exist two large conduits for stockpiling of water, which later combines into a single river. Between these two courses, there are twenty to twenty-five fisher-society huts located. During ancient times the mentioned spot was recognized as *Dirbo*. Afterward, it was renamed *Kalachi-Jo-Goth*, signifying the town of *Kalachi* (Kho-

zema, 2015). An old and a highly populated town, Lyari is a place where more than 600 000 people reside. Their love for football can be noticed by more than 100 football clubs, 11 grounds and 2 stadiums located in the town.

Lyari was first populated by the Sindhi people, who pursued fisheries as well as people from Makran, Lasbela and Kalat districts, which are cities and areas of Baluchistan, the province largest in area in Pakistan. These early residents came from Afro-Indian Pakistanis, also recognized as *Sheedis*. Historically, *Sheedis* are the decedents of captured slaves, mariners, servants and dealers from East Africa, who came to this region during 12th to 19th century. Their first stay was in lower Sindh as well as the Makran coast, which gave them the name *Makranis*.

TALENT HUNTING OF FOOTBALL PLAYERS

Lyarites are very passionate on playing football. Even, during the holy month of *Ramadhan*, football tournaments are, not only, organized, but also, they are at their peak. Clubs in the locality encourage budding foot-

ballers to take part in the tournaments and demonstrate their talent. It is the dream of every boy in Lyari to become a great footballer like Portuguese Cristiano Ronaldo dos Santos, Argentinean Lionel Andrés Messi and Brazilian Neymar da Silva Santos Júnior (Khan, 2019). They idealize Eric Abidal (France), Vincent Aboubakar (Cameroon), Emmanuel Adebayor (Togo), Sergio Agüero (Argentina), Nicolas Anelka (France), Demba Ba (France), Gareth Bale (Wales), Karim Benzema (France), Faiq Bolkia (Brunei), Merih Demiral (Turkey), Marouane Fellaini - Bakkioui (Morocco-Belgium), Mohammed Salah Hamed Mahrous Ghaly (Egypt), Mario Götze (Germany), Eden Hazard (Belgium), N'Golo Kante (Mali-France), Sergio Ricardo May (Brazil), Ozan Mohammed Kabak (Turkey), Ahmed Kutucu (Turkey), Kylian Mbappé (France), Wakaso Mubarak (Ghana), Sergio Ricardo Neves (Brazil), Abdülkadir Ömür (Turkey), Mesut Ozil (Germany), Paul Pogba (Guinea-France), Franck Ribery (France), Bacary Sagna (France), Xherdan Shaqiri (Switzerland), Moussa Sissoko (France), Çağlar Söyüncü (Turkey), Cengiz Ünder (Turkey),

Carlos Tevez (Argentina), Arda Turan (Turkey) and Yusuf Yazıcı (Turkey).

The interest of Lyarities is noticeable during the season of Football World Cup. Every youngster, adult and older person is noticed wearing the jersey of his favorite team. LEDs are displayed in public places, where cheering and exciting mobs scream around whenever a goal is secured.

Lack of public attention towards sport, in particular, football has demotivated the players, which made them getting involved in evil deeds (Humayun, 2017). Those, who do play football under these discouraging circumstances, do not possess training in current techniques, estimating the strengths and the weaknesses of other players as well as disciplined training tailored for specific skills (Mahfooz, 2019). The inhabitants enjoy street football and night football. During the visit of foreign ship crew to Karachi port, they would invite local laborers to play football. This is how the game was introduced here. In return, those laborers were paid

keeping their motivation alive. Lyari is called Mini-Brazil. The Lyari children have overcome the life of being homeless, exposed to violence, drugs and petty crimes before taking part in the Street Child World Cup in Rio de Janeiro, Brazil in April 2014 (Raheel, 2014a). Every household here has a family football story (Raheel, 2014b). This is a reality that Lyari is excelling in football than any other part of the country. During the FIFA (Fédération Internationale de Football Association) tournament matches, political tensions and gang activities subside. Various local football competitions and leagues are organized each year to satisfy the thirst of game enthusiasts. These competitions give the platform of training to the young footballers. Football grounds of Lyari have contributed to international achievements of football team of Pakistan (Khozema, 2015). Foundations of Lyari's House of Football were laid in 1976 much before the establishment of the PFF (Pakistan Football Federation) House in 2003, the national football headquarters based in Lahore (Hasan, 2020a). Before that the

football house, based in Lyari, was the PFF headquarters.

Talent identification in football is based on the prediction of elite football performance. Bergkamp *et al.* (2019) critically evaluated the methodology of studies aimed to empirically relate performance characteristics to subsequent success in football. It is suggested to employ these scientific methodologies for talent hunting in the Lyari youth.

SOME PROMINENT FOOTBALL ACADEMIES

Before discussing the proposed football academy, let us look at a few football academies of the world: *Grêmio Academy*, Porto Alegre, Brazil; *Altınordu Sports Club*, İzmir, Turkey; *La Masia*, the Youth Football Club of Barcelona, Spain and *Centre Technique National Fernand Sastre*, referred to as *INF Clairefontaine* (Institut National du Football de Clairefontaine), Clairefontaine-en-Yvelines, France. Law & Sanderson (2019) describe the operation of *Grêmio Academy*. In the words of Francesco Barletta, director of *Grêmio*, "We don't play to win, we play to develop.

When the players get to this level, it is a source of joy for us." The objectives of the training are:

- Forming first-team players
- Produce players, who may adapt to any working model at any club in the world and are prepared for any situation.

Players in all age groups are trained in the fundamentals – passing, shooting, control, heading and tackling; small-sided game is designed to work at the same time on keeping progression, counter-attacking and working the ball out wide. Their strength is diversity of the opponents – Uruguay trains them in physical confrontation; Paraguay, a lot of aerial balls; Argentina, speed; Chile, transitions; more attack comes from Columbians, making the Grêmio players work on defence. The team entrusted with developing players consists of coördinator and assistant coördinator of physical preparation, psychologist, education coördinator and social worker, grooming them academically in conjunction with on-field development.

Altınordu Sports Club was established on December 26, 1923. Club colors are red and dark blue. The name comes from Altınordu State, a great Turkish Empire in the past. Altınordu won championship 6 times in Izmir League. At the end of 2011- 2012 season, the team was in the Turkish 3rd League (Professional). After the Seyit Mehmet Özkan taking over the team, the club changed its structure and became a football academy. Its young football philosophy comprises of good person, good citizen and good football player. Club vision is creating "elite professional football players from the children of these lands" and mission may be described as providing "children the opportunity to play sports, to make them sportsmen, and to find talent from them and to contribute to the country's football" (Yaşar & Sunay, 2019).

In *La Masia* most of time of the players is consumed in studying. They rise at 0645h, brush teeth and shower, have breakfast at 0700h and leave for school at 0730h, spending time on the school premises from 0800h to 1400h, followed by lunch and

free time till 1600h. After that, there is additional schooling as well as training not exceeding 1 hour and 30 minutes. After taking another shower, they go back to their dormitories. After dinner at around 2100h, they have relaxation time, which they can spend on TV/Internet until 2245h. After brushing teeth, the students retire for the day at 2300h. La Masia's viewpoint is that a proper balance in studying, training and entertainment is the chief requirement for football. "We're always looking for the type of player, who's not physical but a very good thinker, who's ready to take decisions, who has talent, technique and agility", observes Carles Folguera, director of La Masia (Shahin, 2014).

Serving for the last 30 years, *Clairefontaine Academy* produced many football players to play for France. The large campus comprising of 56 hectares has given the prospective footballers the most sophisticated training facilities in Parisian region of France to play for the French team in Football World Cups. Motivation of the members can be seen from the fact that youngsters

train even through the rain (Dean, 2018).

Sugiyamaa *et al.* (2017) recommend that the Japanese Football Association and all stakeholders connected with grassroots football be urged to continue working in unison to achieve further encouragement of grassroots football and eventually the promotion of family football to eight million people by 2030.

MODEL FOOTBALL ACADEMY IN LYARI TOWN

The proposed football academy in Lyari is supposed to focus on the training of male footballers. It should be named after a famous footballer of the locality. Boys are to be inducted in the academy at the age of 5 years; there'll be 2 intakes each year – spring and fall. The prospective players shall go through rigorous psychological examination, physical examination and fitness testing at the time of induction (Kamal & Khan, 2013; 2014; Kamal *et al.*, 2017) to determine their suitability for pursuing a career in football. At the end of every term, there should be a follow up of psychological

cum physical examination combined with fitness testing to determine improvement in fitness and health statuses (mental and physical) achieved during the term.

The students shall study in the academy till they pass their Higher Secondary Certificate (Intermediate)/A Levels (Cambridge)/IB (International Baccalaureate) examinations at the age 17-19 years. At this stage, they'll enter Shaheed B nazar Bhutto University, Lyari or any other reputable university of the country or a foreign country.

INFRASTRUCTURE OF THE ACADEMY

During Indo-Pakistan partition, KMC football stadium in Lyari was constructed, which comprised of deserted land enclosed with 12-feet tall walls. Many international teams played in this stadium. According to a famous football coach of Lyari and Ex-FIFA Referee, Ahmed Jan, during sixties of the last century, a number of teams from different countries visited Karachi for playing friendly matches. These included Chinese XI (1963), Indonesian (1964), FC

Neftyanik accompanied by youth teams from Soviet Union (1964). In addition, teams from Kingdom of Saudi Arabia, United States of America and Turkey, also, played the matches (Ali & Khan, 2017).

Following are the four major infrastructure components, which are needed for a successful operation of football clubs:

- a) *Physical installations* that include resources for training, administrative offices, support department as well as areas for relaxation
- b) *Material facilities*, which must be provided in these clubs include medical, nutritional and physiotherapy assistance
- c) *Human resources* such as managers, coaches and clinical staff
- d) *Logistics*, which means access to the training centers (distance) from airport, train-station, inter-city bus terminal, stadium, hospital, etc. (Araujo *et al.*, 2014).

In addition, there is a role of social tensions behind the economic drivers and social foundations of football. Jaworska

(2020) argue “that the design of European club football, historically driven by the unpredictability of sport competition and loyalty of fans, who stand behind their clubs regardless of their performance, becomes a form of oligopoly, which in the long term can undermine its development.”

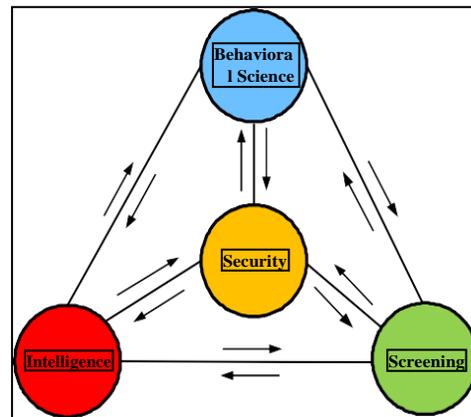
For the proposed academy, we need state-of-the-art buildings – classrooms with multimedia projection. Teachers and coaches should be provided with iPad to convert this projection into smart board allowing teaching, football coaching and physical training from any part of the classroom. In addition, each classroom should have LED display, glass board and boards to put on posters and stickers as well as flip charts. The academy should have a library/museum, a gymnasium, a large-size swimming pool as well as professional football grounds, one with large LED display.

Security in the Campus

Screening should be efficient (tests, having high relative sensitivity, should be placed at the top level of screening pro-

ocol – all at-risk cases should be

Figure-1: Behavioral science, intelligence and screening – three pillars for security architecture:



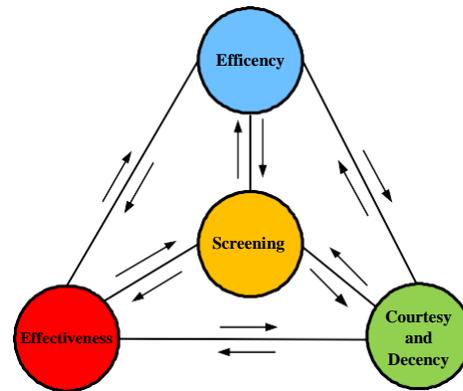
identifiable) and effective (tests, having high relative specificity, should be placed near the bottom of the screening protocol – innocent players should not be inconvenienced). Relative sensitivity and relative specificity are defined in Kamal *et al.* (2013b) and explained in Kamal *et al.* (2016b). Security is proper combination of behavioral science, intelligence and screening (Figure-1). It must be courteous and preserve human dignity (Figure-2).

The arts and the sciences of security screening should be considered as solutions optimized between players' dignity (privacy and modesty considerations) and the requirement for a detailed security check. However, the problem is like Russell's paradox in mathematics. If something happens in the academy because a player was not checked thoroughly, then there is a genuine question, why not. If nothing happens, then one would be questioning the need for a thorough search (Wasim *et al.*, 2013).

Hidden cameras, unusual motion-detection devices, hostile - intent detection through thermal analysis of facial sweat, eye-movement detection, all combined through suitable algorithms and watched remotely by security experts and psychologists, should reduce such incidents. Buildings should have provisions in their design to manage the situation in the event of a hostile takeover. A proper threat analysis should be performed on a daily basis at the start of each working day, weekend as well as during vacations using latest technolo-

gies (Kamal, 2010). Khan *et al.* (2017) recommend that Government of Pakistan must take concrete measures to ensure the security of athletes.

Figure-2: Efficiency, effectiveness, courtesy and decency –



Bags and persons of players should be checked for weapons and pointed/sharp objects using pat downs, canine teams and observers; sending carryon baggage through X-ray machine – shoes, clothes and other personal items carried close to body should not be X-rayed (Kamal & Khan, 2014). Belongings and persons of all visitors, prospective parents, and staff from NGOs coming to campus, delivery personnel as well as maintenance personnel should be security checked

(Kamal & Khan, 2018) to avoid shooting spree by gunholding individuals in Marjory Stoneman Douglas High School, Parkland, Florida, United States (2018) and Sandy Hook Elementary School, Newton, Connecticut, United States (2012), terrorist attack in the Army Public School and College, Peshawar, Khyber Pakhtunkhwa, Pakistan (2014) as well as terrorist take over in School Number One, Baslan, North Ossetia-Alania, Russia (2004).

A proper identification mechanism should be an essential part of security infrastructure. Identification should be based on face recognition using dotted-rasterstereography (Wasim *et al.*, 2013) and biometrics (thumb impression). ID cards should have photograph of the student, class, house, academy name as well as bar code, but not the name – if worn outside the campus, strangers should not be able to address the student by his first name and possibly do harm. Same goes for school bags.

Green Campus

Separate leisure walking, brisk walking, jogging, cyc-

ling, electrical- bus / car / monorail / motorbike / tram nonintersecting tracks on the Green Campus” of football academy. Cycles as well as electrical vehicles have zero emissions. There should be color-coding for different routes of public transport as in New York City. Monorails and trams should have different sides of exit and entry as is the practice in Japan – the exit door opening a few *seconds* earlier than the entrance door. Such tracks should encourage walking and jogging without fear of getting hit by vehicles. Cycling provides light exercise. It is a faster mode of transportation as compared to brisk walking.

All fares of public transport are to be paid through face recognition and biometrics avoiding plastic pollution and paper wastage – saving trees (Kamal *et al.*, 2012).

No two buildings should be adjacent. There should be color-coding for different buildings on location and in maps throughout the campus – same color for walking / biking /

driving tracks leading to buildings. The buildings should be open from all four sides with wide glass window panels facing greenery and open space. All buildings should be four stories or less, connected to other buildings / train station through satellite tunnels on first floor. There should be no structure on ground floor. Such a setup should free the administrators from anxiety of flooding in case of heavy outpour. Proper drainage system should be constructed for all open walkways and roads. First floor should be 10 feet above the ground. All buildings should have smoke detectors, sprinklers, alarm systems as well as metallic exit stairways separated from the main structure. These stairways should be connected to the main building through metallic monkey bars. Such a setup has the potential to avoid tragedies like Grenfell Tower in London, United Kingdom during June 2017. The buildings should be earthquake resistant – cement-concrete-mix-modeling to determine strength of structure should be based on the Lyari soil, not from data obtained in the United Kingdom.

FUNCTIONING OF THE ACADEMY

The academy should offer cutting-edge curriculum developing creative thinking and critical analysis (Kamal & Siddiqui, 1986), making the players leader-integrators, who are able to face challenges of the third millennium, by applying sportsman spirit to all walks of life (Kamal, 2013; 2015a). Curriculum development should be a process, not an event, which is constantly updated to keep up with current educational and sport trends. It must have depth (building up knowledge through concepts and techniques learnt in previous classes – concept of pre-requisite of a course) and breadth (enhancing knowledge in one subject through concepts and techniques learnt in another subject taken concurrently – concept of co-requisite of a course). Deciding on philosophy, writing contents and developing pedagogical techniques, the curriculum should cover cognitive, affective as well as psychomotor domains. The training of players must focus on concept building, which

should lead to problem-solving skills (Kamal, 2003; 2008) by involving them into deep group discussions – the teacher (facilitator) should understand group kinematics (letting the group interact among members to come up with a direction) and group dynamics (periodically directing the group towards one-to-four lines of action to decide for the best and the most practical one).

Tolerance and empathy towards different points-of-view should be inculcated during each academic and co-curricular activity performed at the academy (Aslam, 2017) through emphasizing team kinematics and team dynamics of football (Frencken & Lemmink, 2007). During the course of studies and coaching, future footballers should learn life skills, which include communication, emotional skills, goal setting, leadership, social skills, teamwork and time management (Yilmiz, 2020). Team spirit influences personality development of footballers, which may be observed in (Barnat *et al.*, 2011):

- Eagerness for competition.
- Following the agreed-upon team organizational rules.
- Self-discipline.
- Achieving confidence in self during the process of training.
- Controlling self in situations, which produce stress.
- Obedience to the team.
- Continuous pursuit of development of self, both personal and sport.

Continuous monitoring of correlation of co-curricular activities with academic performance should guide the academy planners and administrators to refine co-curricular activities (Iqbal *et al.*, 2019). In order to promote international linkages and communication capabilities in out-of-country competitions, the students' should be required to learn two international languages, along with English.

For the purpose of efficient and effective teaching and coaching, teachers and coaches may use graphs, charts, maps, diagrams, photographs, power-point slides, web-based material, 3-D models (objects and subjects

– e. g., demonstration of anthropometric-measurement techniques on human subjects), interactive software and videos. A comprehensive course flyer should be provided at the beginning of the session, complemented by lecture notes for each topic. A lecture should be followed by a tutorial, which may include discussion of the topics already covered/problem-solving session.

Heavy school bags, in which a number of books and copies are carried, contribute to *scoliosis* instead of *scholarship* (Kamal, 2015a). It is suggested to use only one book (different sections for different subjects) and one workbook for a single term, with topic details and advancements supplemented through CD / online content. A fresh book and workbook should be prepared for each term. This should allow subject updates to be incorporated in the curriculum, keeping the contents up-to-date in line with the fast knowledge explosion and keep the interests of students alive (Kamal, 2015a; Kamal *et al.*, 2020b). The first author was “blessed” with science textbooks,

written 30-40 years ago from the time they were used in classrooms. To avoid embarrassment, year-of-publication was omitted from the editions used.

In order to maintain discipline, smoking as well as chewing of *pan* and *gutka* are not allowed for students, teachers, staff and administrators on the academy campus. Players in the academy are not permitted to have tattoos on their body and cannot wear any ornaments, e.g., chains, rings, lockets, *etc.* They have to grow very short hair on head. The academy should organize Sindh-based matches for under-19, under-17, under-15, under-13, under-11 and under-9 players to discover budding football players and offer scholarships to those, who show exceptional potential. All matches should be video recorded and analyzed in slow motion for training and research purposes.

Integrated Sport-Oriented Curriculum

The Integrated Sport-Oriented Curriculum is to be specifically designed for the academy, which should include football-oriented examples in different

subjects taught, *e. g.*, languages (Arabic, English, French, Urdu, Portuguese, Sindhi / Baluchi, Spanish, Turkish), mathematics, science, Quranic studies, Pakistan studies, Muslim history and civilization, art, drama, health and physical education, *etc.* (Kamal, 2009; 2016b). These could include computation of age of footballer (*year-month-day*) and decimal age in *mathematics* course; estimation of force exerted on a football during a kick in *physics* course; life history of footballers of Pakistan in *history* course, *e. g.*, Qayyum Ali Changezi, Abdul Waheed Durrani, Osman Jan, Moin-ud-Din Kutty, Captain Mohummed Umer (Pride of Performance Awards), Sergeant Mohiuddin Kutti (Pride of Performance Awards), Musa Ghazi, Masood Fakhri, Abid Hussain Ghazi, Masood-ul-Hassan, Jamil Akhtar, Abdul Ghafoor Majna, Mohummad Yousuf Senior, Yousuf Junior, Turab Ali, Ali Nawaz Baloch (Pride of Performance Award), Qadir Bakhsh Putla, Murad Baksh Makwa, Sunmbul Khan, Ghulam Rabbani, Abdullah Rahi, Hussain Killer, Taj Lala Senior, Moula Baksh, Ghulam Abbas Baloch, Moula Baksh

Momin, Ghulam Hussain Patoo, Moula Bakhsh Gotai, Khamisa Boss, Younus Rana and Ayub Dar; Turkish footballers, *e. g.* Ali Sami Yen, Lefter Küçükandonyadis, Metin Oktay, Ali Cemal, İlhan Mansız, .Ali Rıza Sergen Yalçın, Tanju Çolak, Mustafa Kemal İzzet Hasan Sas, Tugay Kerimoglu, Nihat Kahveci, Nuri Sahin, Hakan Şükür, Rüştü Reçber and Emre Belozoglu; Brazilian footballers, *e. g.*, Didi Waldyr Pereira, Manuel Francisco dos Santos Garrincha, Edson Arantes do Nascimento Pelé, Gérson de Oliveira Nunes, Carlos Alberto Torres, Jair Ventura Filho, Roberto Rivellino, Eduardo Gonçalves de Andrade Tostao, Arthur Antunes Coimbra (known as Zico), Paulo Roberto Falcão, Sócrates Brasileiro Sampaio de Souza Vieira de Oliveira, Romário de Souza Faria, Cláudio André Mergen Taffarel, Marcos Evangelista de Moraes Cafu, Rivaldo Vítor Borba Ferreira, Roberto Carlos da Silva Rocha, Ronaldo Luís Nazário de Lima, Ronaldo de Assis Moreira-Ronaldinho Gaúcho and Marcelo Vieira da Silva Júnior as well as international footballers, *e. g.*, Alfredo Stéfano di Stéfano Laulhé (Argentina / Colombia/Spain),

Hendrik Johannes Crujff (the Netherlands), Michel Platini (France), Diego Armando Maradona (Argentina), Roberto Baggio (Italy), Zlatan Ibrahimovic (Sweden), Andrés Iniesta Luján (Spain), Wayne Rooney (England), Zinedine Zidane (France). Xavier Hernández Creus (Terrassa / Spain), David Villa Sánchez (Spain), Iker Casillas Fernández (Spain), Samir Nasri (France), Nemanja Vidić (Serbia) and Wesley Sneijder (the Netherlands). Posters, paintings and line drawings of football matches / footballers could be included in *arts* class and lives of famous footballers could be portrayed in *play (drama)* – the goal is to make players live through football culture during studies, activities and actual practice on a football field.

Besides football as major, the players are offered gymnastics and swimming as minor and table tennis, badminton, tennis as well as track and field as electives.

Academy-University Interface

The academy curriculum should be interfaced with the university curriculum and

prepare the students to enter top-ranking universities nationally and inter-nationally (Siddiqui & Kamal, 1987).

Co-Curricular Activities

Players should be trained in soft skills – communication skills, presentation skills, negotiation skills, emotional intelligence (anger and depression management), sport writing, football commentary as well as team kinematics and dynamics. They should be assumed to start from zero and trained (*a*) in the art of questioning, (*b*) to accept own mistakes, (*c*) to formulate new concepts, (*d*) to continue the habit of lifelong learning, (*e*) to change mindset and (*f*) to kill ego. In order to achieve these objectives, the academy should have own TV and radio stations. Students should be given the responsibility to bring out campus newspaper, monthly newsletter and yearbook. To graduate from the academy, the player has to participate in 5 elocution contests, 5 essay-writing competitions, 5 general-knowledge competitions, 5 poster / model making competitions and 20 *hours* of community service. In the final year, workshops are

arranged to help the players secure university or professional college admissions.

Development of Football Skills in Different Age Groups

Classes for players in the age range 5-7 *years* should focus on coordination and improving overall fitness, recognizing individual talents and working towards letting them shine. In the age range 7-9 *years*, football is learnt through activities and games, making the players familiar with basic techniques – controlling the ball, dribbling, observation skills, shots, *etc.* Players in the age range 9-13 *years* are supposed to master the technique, making them two-footed and fast, developing spatial orientation, working on changing the tempo and direction of the game as well as making independent decision on the spot.

Football needs selective, quick and well-timed responses to stimuli in visual and acoustic sensory modalities. Quick perception and subsequent decisions permit footballers to efficiently and effectively follow course of the game, the passes to be given

to, and received from others as well as movements of other footballers. Computerized cognitive training may enhance performance of footballers (Fózer-Selmeci *et al.*, 2019). Eniseler *et al.* (2017) conducted a study, which showed that high-intensity, small-sided games might be used as a successful training method to improve the abilities of short passing as well as repeated sprint.

HEALTH AND SAFETY PERSPECTIVES

Daily Inspection

There is a need for morning inspection, covering safety and security, physical and mental health as well as cleanliness and hygiene. The physical portion should be directed towards discovering communicable diseases, whereas the mental portion focuses on discovering any form of abuse, peer pressure/bullying, neglect and tendencies to disturbed behavior (Kamal & Khan, 2014) as well as discovering signs and symptoms of schizophrenia/depression (Kamal & Jamil, 2012). The hygiene portion of inspection should be dedicated to cleanliness of hair, nails,

uniform, shoes, vest, underwear and socks. Those showing the slightest abnormality must be thoroughly examined by school doctor, before being allowed to attend their classes. Daily inspections should, also, include signs for use and distribution of controlled substances. Hand washing after activity programs, before and after consuming food and using washroom have the potential to reduce vital and bacterial problems (Kamal & Khan, 2018).

Safety during Game of Football

Most accidents occur for under-11 students. Students should be trained to follow safety procedures (supplemented by trainings for teachers, health-care team, staff, coaches, administrators) combined with well-defined and properly documented policies on how to handle misadventures (Kamal & Khan, 2014). Fire and disaster drills, accompanied by proper evacuation instructions, must be part of training.

Proper safety-gear must be worn on head to prevent head-ball injuries (Braham *et al.*, 2004). Another matter of concern is

concussion in football players. Kerr *et al.* (2019) have published a study, which reports concussion rates for high-school-football games rising. The authors recommend, "Pediatricians working with youth sport organizations should advocate the use of safety measures to help prevent concussions".

Controlled-Substance Prevention

Lyari is considered notorious for being the center of drug abuse (Ghani, 2014). Yaqoob Baloch, a football coach, observes that Lyari's youth is very talented and sports especially football is a great way of keeping them away from street crimes and drugs (Baloch, 2012).

Players' person, belongings and lockers should be searched on a daily basis. For boarders, their dormitory rooms should be searched. There should be, zero tolerance" for drugs on WADA's (the World Anti-Doping Agency) prohibited list (Heuberger & Cohen, 2019). A good review of doping in sports may be found in Singh *et al.* (2017). In addition, use of painkillers should be discouraged, as the players may become addicted to them.

Their overuse has indicated kidney problems in footballers (Stafford, 2017). To reduce muscle stiffness after a vigorous game, oil massage and bath in lukewarm water is recommended.

Prevention of Vitamin-D Deficiency

Vitamin-D deficiency is becoming pandemic in Asian countries. Defined as a group of secosteroids, which is fat-soluble, vitamin D increases intestinal absorption of micronutrients (calcium, magnesium and phosphate). This vitamin is necessary for bone maintenance and proper absorption of calcium from food intake. Sun radiation goes through skin-layers called the epidermis, where there's a chemical termed as 7-hydrocholesterol, which is absorbed through ultraviolet light to make pre-vitamin-D molecule. Warm skin changes pre-vitamin D₃ to vitamin D₃, which moves into the blood system, so as to be activated and used (Kamal & Khan, 2018).

A daily dose of 600 IU is recommended according to the Consensus Report of the Institute of Medicine, in order to preserve

bones to prevent rickets and tuberculosis (during early childhood), scoliosis (Kamal *et al.*, 2015; 2016b; 2020b), kyphosis and lordosis (during later childhood and adolescence) as well as osteomalacia (during adulthood) and osteoporosis (during old age). Deficiency, which has not been treated, may be the origin of backache, chronic fatigue, muscular and joint pain as well as progressively weakening eyesight (Kamal *et al.*, 2013a).

All players in the academy should be tested for vitamin-D deficiency and provided ample opportunity to absorb recommended daily doses of vitamin D through exposure of skin to fresh air and sunshine (last one guarded-graduated) as well as consumption of sun-ripe fruits and vegetables (Kamal *et al.*, 2013a; Kamal & Khan, 2018). Shirt and skin teams should be formed for internal competitions, which should provide fresh air and sunshine to footballers.

Psychological Well-Being

Football psychology may be considered as the study of footballer's behavior. This specialization deals with psychological/mental factors that affect

football performance. The mental-game coach should utilize this information to boost the performance of an individual as well as a team, by controlling emotions and bringing to minimum the psychological effects of injury and poor performance. This is accomplished through teaching of skills, *e.g.*, goal setting, relaxation, visualization, self-talk, concentration, confidence using rituals, attribution training, awareness and control.

If the coaching is concentrated on the overall objective of winning, it may end up with the coaches being negligent to the pedagogical aspects of football, which may be harmful to both the athletes as well as the coaches. The personalities of the young footballers subjected to educational and emotional neglect might develop in a one-sided manner with the consequence of either identifying with the principle of winning at all costs" or to early dropout and short-lived football careers at the other extreme (Varga *et al.*, 2018).

Mental-game coaching should concentrate on athlete's mental performance as well as physical abilities and assess skills of mental preparation, by

assisting the footballer to expand his range of mental skills to gain more control through synchronizing mind and body. This type of coaching motivates the athletes to link their mental skills and physical abilities to achieve *Peak Performance*.

A group from Karolinska Institutet, Solna, Stockholm County, Sweden used standardized neuropsychological assessment tools to evaluate players' general executive functions including on-line multi-processing such as cognitive flexibility, creativity and response inhibition. Based on their analysis of their results, the authors conclude that both high-division players and low-division players showed better measures of executive functions in comparison to the norm group (Vestberg *et al.*, 2012).

Saether (2018) studied degree of stress levels experienced by Norwegian football academy players aged 12-16 years in 2013 and 2016, divided into 3 age groups 12-13 years, 14 years and 15-16 years. The results showed that 2016 footballer's demonstrated significantly lesser evaluation stress as well as developmental stress and considerably more academic stress as com-

pared to 2013 footballers. As a group, footballers showed positive development due to reduced evaluation stress.

Football may act as healing for many children in the war zones. In the war-torn Syrian refugee camps, game of football has been organized among refugee children by the German cultural organization. Goethe-Institut Lebanon joining hands with the David Nakhid Football Academy arranged to train 150 children and teenagers daily for six weeks. Rim is a teenager, who lived in a refugee hut in the Beqaa Valley since her family left Syria in 2012. She remarks, "When I play football, I forget about what we've seen on the run" (Goethe-Institut Libanon, 2016; 2018; 2019a; b).

Physical Examinations and Fitness Testing

In physical examination, the sport doctor employs physical senses (hearing, sight, smell, taste, touch) aided by instruments (ophthalmoscope, otoscope, stethoscope, thermometer, etc.) as well as non-contact (clinical photography, moiré fringe topography, rasterstereography, dotted-rasterstereogra-

phy) and non-invasive (pantograph for drawing spinal outline) procedures to determine statuses of body organs (structure and function) so as to form a diagnosis (Kamal *et al.*, 2017). Physical examinations should include thorough eye inspection to pinpoint signs of dilated pupils indicating use of controlled substances (Kamal & Khan, 2014).

The main objective of pre-participation physical examination and (health- + skill-) related fitness testing is safety of prospective footballers, their teammates, their coaches and staff of the academy. It aims to find out conditions, which may cause serious injury and harm during football practice, *e.g.*, heart problems (Wilbert-Lampen *et al.*, 2008), epilepsy, hernia (Gilmore *et al.*, 2014) or hydro seal and correctable conditions (if detected early), *e.g.*, knees knocking, communicable diseases, *e. g.*, skin infections, evaluation of sight and hearing (so that footballers may follow and copy procedures).

End-of-the-term evaluation should combine physical examination with fitness testing (Kamal & Khan, 2013; 2014). It should

concentrate on performance considerations and improvements achieved from the previous term. It has been observed that football practice is associated with decrease in fat weight and a discrete increase in bone and muscle weight (Albuquerque *et al.*, 2005). Mendes *et al.* (2015) describe a study of flexibility and sprint-performance values of adolescent footballers. According to them, flexibility decreases with age and this influences negatively the sprint performance. Training is required in every training department, in order to improve this specific skill of football. Flexibility of the muscles should be developed with a program at a tender age.

The players should be monitored to maintain optimal weight-for-height (Kamal, 2017a; Kamal *et al.*, 2011a), based on anthropometric measurements (height and weight) taken as per agreed-upon protocols, with the players barefoot, stripped- to-briefs, all clothing above the waist removed (Kamal, 2016a). The first author has prepared step-by-step procedures of obtaining height and weight illustrated through labeled photographs of (Kamal 2017a – Additional

File 2) as well as video series on anthropometry (Kamal, 2017b). The footballers should be given 6 monthly targets to maintain height and weight through recommendations generated from Growth-and- Obesity Vector-Roadmap 2.5 (Kamal *et al.*, 2020a – Additional File 4), supported by guidelines to change lifestyle as well as provided with diet plans (Kamal *et al.*, 2020a – Additional File 5). At the end of 6-month period, compliance with the recommended targets of height achievement and weight management is determined (Kamal *et al.*, 2020a – Additional File 6). Puberty rating based on Tanner scales must be conducted at every checkup for peripubertal and pubertal footballers (Kamal *et al.*, 2017). This can be done only if the community beliefs and attitudes towards childhood obesity are changed in the positive direction (Aslam *et al.*, 2013). Mohummed *et al.* (2018) studied fat mass versus body-mass index as relationship connectivity and its contribution to the prediction of the aerobic capacity growth level to monitor the football player weight.

During the physical examination, condition of feet is to be

thoroughly checked for fungus infection, cuts and bruises (Kamal *et al.*, 2011b). In addition, they should be trained to maintain good posture (sitting and standing) from the age of 5 years – posture analysis should be performed regularly using moiré fringe topography (Suzuki *et al.*, 1981) and dotted-rasterstereography (Wasim *et al.*, 2013). From the age of 7 years, gait training should be started (Kamal *et al.*, 2016a) and from the age of 8 years, they should be thoroughly checked for scoliosis (Kamal *et al.*, 2015; 2016b), classifying each player as low-risk, medium-risk or high-risk for falling prey to scoliosis in order to formulate appropriate strategies for follow through (Kamal *et al.*, 2020b). Sport teams should be formed according to build (Kamal & Khan, 2015) as well as classroom sections – this will provide the teacher opportunity to ask students to exchange seats, when half of the lesson is through; keeping them alert and attentive. Further, this arrangement should allow teachers to interact with a maximum number of students (Kamal, 2015b). There should be setting-up exercises at the start of school day and end-of-the-class

exercises for 5-minute duration after each session. Details of such exercises are given elsewhere (Kamal & Khan, 2014; 2018).

Study Design

Convenience sampling was employed to 100 responders (so that the data are normally distributed) to find out reasons of growth and downfall of football in the Lyari Town. Once these factors are identified through data collection and analysis based on statistical methods and techniques, measures shall be taken in the proposed football academy to overcome these hurdles and provide challenges and opportunities to the future footballers of nation.

Sampling

A questionnaire was designed according to hypotheses and given, as a schedule, to 100 persons (70 football players + 10 football coaches + 20 general public, enthusiastic about football) belonging to the Lyari Town.

Collected Data

The responses to 20 questions under the following headings were recorded by our research team:

- Lack of physical resources – facilities and infrastructure (8 questions).
- Noises influencing football game – law and order situation in the Lyari Town (6 questions).
- Shortage of human resources – coaches and trainers (6 questions).

The questions asked are listed in Table-1. They were rated according to 5-point Likert Scale having options – strongly agree, agree, neutral, disagree or strongly disagree. The responses to questionnaire were supplemented with discussions and interviews.

Data Analysis

Data were analyzed using SPSS (Statistical Package for the Social Sciences) Version 22.

I. Lack of Physical Resources – Facilities and Infrastructure
A: Lack of custom-built grounds making players unable to play in a proper fashion
B: Deficiency of support from the authorities
C: Low funding and spending on Lyari Football due to poverty of the community
D: Shortage of local football organizations and clubs
E: Performance of the players not satisfactory
F: Sponsorship lacking for football activities
G: Supporting clubs involved in unfairness and corruption
H: People find it difficult to cooperate with the supporting organizations
II. Noises Influencing Football Game – Law and Order Situation
I: Socio-economic conditions of Lyarites force them to abandon playing and work for earning
J: Support lacking from the government side
K: Usage of drugs has adverse effects on the local teams
L: Weak communication skills and deficient education cause difficult relationship with coaches
M: System of the region difficult to get along with
N: Players abandon football career because of personal conflicts and affairs
III. Shortage of Human Resources – Coaches and Trainers
O: Absence of qualified coaches triggering the decline of football
P: Increasing crime rate in Lyari causing adverse effects on the football activities
Q: Lyari losing capable football players
R: Lyari lacking talent
S: Motivation missing from the players
T: Coach unable to influence decision-making

Table-2: Responses to Different Questions

Categories Option ↓ Questions ⇒	I. Lack of Physical Resources								II. Noises Influencing Football Game						III. Shortage of Human Resources					
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
Strongly Agree (%)	44	52	34	34	28	39	30	27	45	44	44	34	26	36	39	40	26	43	25	33
Agree (%)	40	27	48	28	32	34	41	43	36	20	36	43	39	25	39	42	42	29	36	32
Neutral (%)	01	05	07	11	07	09	10	13	06	15	08	08	12	11	10	06	04	05	13	10
Disagree (%)	06	08	05	11	18	09	09	09	06	09	05	08	11	15	07	07	13	10	09	15
Strongly Disagree (%)	09	08	06	16	15	09	10	08	07	12	07	07	12	13	05	05	15	13	17	10
Total (%)	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Results

Responses are presented as percentages, showing how many of the responders strongly agree, agree, neutral, disagree or strongly disagree with the statement presented to them (Table-2).

Discussion and Future Directions

The survey indicated that community feels strongly that Lyari has the potential to produce international-standard footballers, if the community is given infra- structure, facilities and necessary motivation to achieve distinction for the sake of community and on a larger scale for the sake of Pakistan.

The proposed football academy may be the first step in this direction. The input should be

trained in this institution to proceed for competitor country-level teams in a national academy and ultimately prepare these jewels to become professional footballers through academic-program process (Samur, 2019). For this purpose, teams from other schools should be invited to come and practice on the academy grounds on weekends to provide opportunities for our students to interact with other footballers.

Once established, the Lyari Football Academy should expand its operations to train coaches, referees and managers of football teams. Parents should take a pro-active role in initiating volunteer programs to involve their children in football from the age of 5 years (Siedentop, 2003).

Looking at the passion of the Pakistani girls for football (Monitoring Desk, 2019), an academy for girls similar to the one proposed in this paper for boys may be started once the boys' set-up is streamlined. Two of the Pakistan's national women football team players, Fatima Imran and Huda Naz, emerged from Al-Qadir School in Chakiwara in Lyari Town, by practicing in a football ground situated on the rooftop of their school building (Hasan, 2020b).

Football should act as catalyst to bring out national pride and national unity, religious harmony, racial tolerance and acceptance of ethnic diversity with team efforts employed to minimize social-cultural division in the community and channelizing all efforts to physical well-being (Iqbal *et al.*, 2012).

Long-term goals should be to bring Pakistani football to international scenario, establishing close liaison with footballers of Turkey, Brazil, Spain and France. If India can have the largest cricket stadium in the world, we the Pakistanis could strive to

build the largest football stadium in the world!

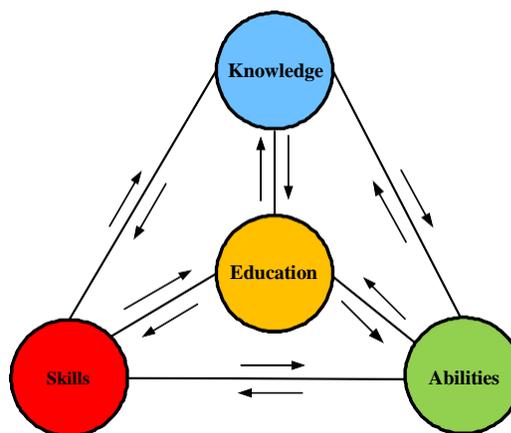
Conclusion

In this work the authors have proposed a model football academy for residents of Lyari Town. A survey was conducted to find out the factors contributing to decline of football in the Lyari area. The questions were asked about the lack of facilities, infrastructure, coaching and training as well as law and order situation in Lyari. Results of the survey indicated that players, coaches and general public are aware of the situation and feel the need for a breeding space for future footballers. The idea of model football academy is triggered by the philosophy of Berea College, a private liberal arts college located in Berea, Kentucky, United States. One of America's top colleges, Berea awards every enrolled student a no-tuition promise, providing students from minority and marginalized communities a chance to get quality education. A proper balance of knowledge, skills and abilities should bring out the natural footballer in every boy, through discipline, routine, competition and performance

(Figure-3). The academy should groom the footballers to have physical, mental, social and spiritual maturities by regular monitoring of their chronological, developmental, phenotypic (biological) and skeletal ages. They should have the *emotional capacity* to deal with the upcoming challenges and opportunities of their profession (football), in particular, and life, in general. They should be made to realize the value of money earned through sport and not showing off or overspending it. A football coach in the United States makes around 10 million US dollars annually (Michael Bennet, Retired NFL Player in Christian Amanpour Show, CNN, August 13, 2020). The world famous football player Sadio Mane of Senegal (West Africa), whose income is Indian Rs 1 crore 40 lakh per week, was seen with broken mobiles in his hand. When asked why he did not purchase a new one, he remarked, "I could buy a thousand – 10 Ferraris, 2 jet planes, diamond watches, but why do I need all of these. I saw poverty, so I couldn't learn, I built schools so that people could learn, I didn't have shoes, I played without shoes, I didn't have

good clothes, I didn't have food. I have so much today that I want to share it with my people instead of showing off". The academics and the football practice should mold personalities of the young footballers to have resilience, grit, fortitude, perseverance, stamina and positive temperament. Football academy in Lyari should, not only, produce top-ranking footballers, but also, persons who have discipline, integrity, tolerance and sensibility to tackle demanding problems in the world with complex economic and social interdependence, contributing to *Gross National Happiness* of the country.

Figure-3: Knowledge, skills and abilities — ingredients for holistic education



KEY POINTS

- The residents of Lyari are extremely enthusiastic about playing football, which has been a part of their culture.
- Every boy in Lyari dreams to become a great footballer like Ronaldo, Messi or Neymar.
- Lack of public encouragement towards football, in particular, from Government agencies has demotivated players.
- A state-of-the-art football academy is proposed to discover and groom football talent among the youth of Lyari.
- Factors hampering development of football in Lyari are surveyed through questionnaire administered to coaches, players and general public.

Informed Consent

Informed consent was obtained from each person giving responses, prior to administering the survey questionnaire.

Conflict of Interest

The authors declare no conflict of interest. This work contains no libelous or unlawful statements and does not infringe or violate the publicity or the privacy rights of any third party.

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Dedication



The authors would like to dedicate this paper to the loving memory of Captain Mohummed Umer Baloch (1935 - March 21, 2004). A recipient of *Pride of Performance*, Umer was 13th captain of football team of Pakistan. Born in Gul Mohammed Lane, Lyari, Umer started his football career at the age of 13 *years* playing for Qadri Sports, Lyari. He represented Pakistan in China, Hong Kong, India, Japan, Malaysia, Myanmar, Singapore and Sri Lanka. He was member of selection

committee of Province of Sindh from 1971 to 1974.

References

- Albuquerque, F., Sanchez, F., Prieto, J. M., Lopez, N. & Santos, M. (2005). Kinanthropometric assessment of football team over one season. *European Journal of Anatomy*, **9** (1): 17-422.
- Ali, M. A. & Khan, M. (2017, May 10). KMC football stadium: doughty glory. Karachi, Pakistan: ARY Sports.
- Araujo, F. P., Miller, K. C. & Manner, C. K. (2014). The effect of Brazilian soccer club infrastructure and player experience on individual player success. *Journal of Physical Education and Sports Management*, **1** (1): 93-99.
- Aslam, S. (2017). Tolerant attitude and managerial conduct among professionals of physical education and sports. *The Sky (International Journal of Physical Education, Health, Sports and Allied Sciences)*, **1**: 1-11.
- Aslam S., Iqbal, Y. & Ghouri, A. (2013). Community beliefs, attitude and awareness about child obesity. *The Shield (Research Journal of Physical Education and Sports Science)*, **8**: 1-25.
- Baloch, Y. (2012, January 24). Football serves a higher purpose in Lyari. Karachi, Pakistan: Dawn.
- Barnat, W., Jastrzębski, Z., Konieczna, A., Radzimiński, Ł., Jaskulska, E. & Bichowska, M. (2011). Social, educational and sports character of football academy in Malbork. *Baltic Journal of Health and Physical Activity*, **3** (4): 325-332.
- Bergkamp, T. L. G., Niessen, A. S. M., den Hartigh, R. J. R., Frencken, W. G. P. & Meijer, R. R. (2019). Methodological issues in soccer talent identification research. *Sports Medicine*, **49** (9): 1317-1335.
- Braham, R. A., Finch, C. F., McIntosh, A. & McCrory, P. (2004). Community football players' attitudes towards protective equipment – a pre-season measure. *British Journal of Sports Medicine*, **38** (4): 426-430.
- Dean, S. (2018, June 8). Behind the scenes at Claifontaine: how France produced a new generation ready to take on the world? London, UK: The Telegraph.
- Eniseler, N., Şahan, Ç. Özcan, I. & Dinlker, K. (2017). High-intensity small-sided games versus repeated sprint training in junior soccer players. *Journal of Human Kinetics*, **60**: 101-111.
- Fózer-Selmeci, B., Kocsis, E., Kiss, Z., Csáki, I. & Tóth, L. (2019). The effects of computerized cognitive training on football academy players' performance. *Cognition, Brain, Behavior*, **23** (3): 209-229.
- Frencken, W. G. P. & Lemmink, K. A. P. M. (2007, January 16-20). Successful performance in soccer: team kinematics of goal scoring opportunity in small-side soccer games. *The Sixth World Congress on Science and Football*, Antalya, Turkey, abstract#O-024; *Journal of Sports Science and Medicine*, **6** (Supplement 10): 19, 20 – (2008). *Science and Football VI (Proceedings)*, edited by Reilly, T. & Korkusuz, F., pp. 161-166.

- Ghani, F. (2014, July 10). Lyari trades guns for football. Doha, Qatar: Al-Jazeera.
- Gilmore, C. J., Diduch, D. R., Handley, M. V. & Hanks, J. B. (2014). Sports hernia – history and physical examination: making the diagnosis with confidence. *Sports Hernia and Athletic Pubalgia: Diagnosis and Treatment*, Diduch, D. R. & Brunt, L. M. (ed.), Boston, United States: Springer, 75-85.
- Goethe-Institut Libanon (2016, September 23). Soccer camp Lebanon 2016 – last week training in Beirut; download link: <https://youtu.be/lqvBonW-GYM>
- Goethe-Institut Libanon (2018, March 22). Goethe soccer game; download link: <https://youtu.be/oE1NwnFTJR0>
- Goethe-Institut Libanon (2019a, November 18). Soccer camp – final tournament; download link: <https://youtu.be/u3dKe7XZVzI>
- Goethe-Institut Libanon (2019b, November 18). Train the trainers; download link: <https://youtu.be/u3dKe7XZVzI>
- Hasan, S. (2020a, April 19). Lyari's House of Football. Karachi, Pakistan: Dawn, p. 4 (Sports/ Spectrum)
- Hasan, S. (2020b, March 15). Chakiwara school hosts football ground on the roof. Karachi, Pakistan: Dawn, p. 18 (Metropolitan)
- Heuberger, J. A. A. C. & Cohen, A. F. (2019). Review of WADA prohibited substances: limited evidence for performance-enhancing effects. *Sports Medicine*, **49** (4): 525-539
- Humayun, A. (2017, August 18). Football in Karachi: diamonds in the rough. Karachi, Pakistan: Geo News
- Iqbal, Y., Aslam S. & Ashfaq, A. (2019). The impact of co-curricular activities on physical and mental health of secondary school students in FATA. *The Sky (International Journal of Physical Education, Health, Sports and Allied Sciences)*, **3**: 49-64
- Iqbal, Y., Sami, K., Aslam, S., Anari, M. A. & Hussain, S. A. (2012). Physical activities among college students participating in sports pertaining to socio-cultural conditions of Sindh. *The Shield (Research Journal of Physical Education and Sports Science)*, **7**: 18-31
- Jaworska, M. (2020). European football at the crossroads. *Journal of Physical Education and Sport*, **20** (Supplement 2): 1188-1194
- Kamal, S. A. (2003, February 7-9). The training of a physicist: from concept building to problem-solving skills. *The Second International Conference on Physics Education*, Karachi, Pakistan: Center of Physics Education, National Center for Physics and Department of Physics, University of Karachi; full text: <https://www.ngds-ku.org/Papers/C57.pdf>
- Kamal, S. A. (2008, December 18-20). From mathematics to technology: a bridge through physics and engineering. *Proceedings of the International Conference on Physics and the World of Today*, edited by Jafri, M. A. & Naqvi, S. M., Karachi, Pakistan: Department of Physics, University of Karachi, pp. 32-39 (invited paper);

- full text: <https://www.ngds-ku.org/Papers/C70.pdf>
- Kamal, S. A. (2009, January 15). The Integrated Educational System: a pre-university educational system for the third millennium. *The Sindh Educational Conference*, Karachi, Pakistan: Jamia Millia Government College of Education (keynote lecture delivered as Chief Guest); extended abstract: <https://www.ngds-ku.org/Presentations/Education.pdf>
- Kamal, S. A. (2010, May 10, 11). An airport-passenger-screening system based on emitted IR and thermal radiation. *The Fifth Symposium on Computational Complexities, Innovations and Solutions (CCIS 2010)*, Abbotabad, KP, Pakistan: COMSATS Institute of Information Technology; extended abstract: <https://www.ngds-ku.org/Presentations/Security.pdf>
- Kamal, S. A. (2013, December 12). Designing curricula, which produce leader-integrator of tomorrow. *The Karachi University Educational Conference*, pp. 3, 4, Karachi, Pakistan: Faculty of Education, University of Karachi (keynote lecture); extended abstract: <https://www.ngds-ku.org/Presentations/Leader-Integrator.pdf>
- Kamal, S. A. (2015a). Designing curricula of mathematics, which produce leader-integrator of tomorrow. *The Karachi University Journal of Education and Research*, **3**: 11-42; full text: <https://www.ngds-ku.org/Papers/J39.pdf>
- Kamal, S. A. (2015b, September 2). Research empowering teaching for community development: an example from sport-mathematics research. *The Second Educational Conference on Educational Challenges of the Pakistani Children in the Twenty-First Century*, p. 1, Karachi, Pakistan: Faculty of Education, University of Karachi (keynote lecture); extended abstract#1: <https://www.ngds-ku.org/Presentations/Research-Teaching-ComDev.pdf>
- Kamal, S. A. (2016a, April 7). *Manual for Obtaining Anthropometric Measurements*, version 9.11.
- The NGDS-Pilot-Project-e-Publication, Karachi, Pakistan: University of Karachi; full text: https://www.ngds-ku.org/ngds_folder/M02.pdf
- Kamal, S. A. (2016b). Pedagogical challenges and opportunities in sport and anthropometrics. *The Karachi University Journal of Education and Research*, **4**: 1-30; full text: <https://www.ngds-ku.org/Papers/J44.pdf>
- Kamal, S. A. (2017a). Integration of BMI-based-optimal mass and height-percentile-based mass to propose the sixth-generation solution of childhood obesity. *International Journal of Biology and Biotechnology (Karachi)*, **14 (4)**: 485-502; full text: <https://www.ngds-ku.org/Papers/J49.pdf>
- Additional File 2 – Height, Mass and MUAC Measurements (step-by-step protocols illustrated through labeled photographs): https://www.ngds-ku.org/Papers/J49/Additional_File_2.pdf
- Kamal, S. A. (2017b, October 15). A series of 5 videos on Anthropometry of Children" First Video – Introduction to Anthropometry of Children: [https:// youtube/sXGGaM73S3E](https://youtube/sXGGaM73S3E) Second Video –

- Preliminaries: <https://youtube/GxnEowK0AcE>
- Third Video – Measurement of Height of Children: <https://youtu.be/l1xs-xkhiBk> Fourth Video – Measurement of Mass of Children: <https://youtu.be/q916pgYCiC8> Fifth Video – Measurement of MUAC of Children: https://youtu.be/O6pr7wfgA_0
- Kamal, S. A., Azeemi, H. I. & Khan, S. R. (2017). Psychological testing, physical examination and fitness testing of primary-school students for participation in gymnastic activities. *Pamukkale Journal of Sport Sciences*, **8 (2)**: 15-40; full text: <https://www.ngds-ku.org/Papers/J48.pdf>
- Kamal, S. A., Ansari, M. J., Ansari, S. A. & Naz, A. A. (2020a). Two-parameter (height and mass) problem solved by fitting parabolic curves – the eighth-generation solution of childhood obesity. *International Journal of Biology and Biotechnology (Karachi)*, **17 (1)**: 23-57; full text: <https://www.ngds-ku.org/Papers/J54.pdf>
- Additional File 4 – Methods of Construction of Roadmaps 2.5: https://www.ngds-ku.org/Papers/J54/Additional_File_4.pdf
- Additional File 5 – Lifestyle Adjustment, Diet and Exercise Plans: https://www.ngds-ku.org/Papers/J54/Additional_File_5.pdf
- Additional File 6 – Navigational and Guidance Trajectories for Z. I. R.: https://www.ngds-ku.org/Papers/J54/Additional_File_6.pdf
- Kamal, S. A., Jamil, N. & Khan, S. A. (2011a). Growth-and-Obesity Profiles of children of Karachi using box-interpolation method. *International Journal of Biology and Biotechnology (Karachi)*, **8 (1)**: 87-96; full text: <https://www.ngds-ku.org/Papers/J29.pdf>
- Kamal, S. A. & Jamil, S. S. (2012). A method to generate Growth-and-Obesity Profiles of children of still-growing parents. *International Journal of Biology and Biotechnology (Karachi)*, **9 (3)**: 233- 255; full text: <https://www.ngds-ku.org/Papers/J30.pdf>
- Kamal, S. A. & Khan, S. A. (2013, September 4, 5). Fitness for primary-school children. *The First Conference on Anthromathematics in the Memory of (Late) Syed Firdous (ANTHROMATHEMATICS 2013)*, p. 24, Karachi, Pakistan: Department of Mathematics, University of Karachi and Hyderabad, Pakistan: Government College; extended abstract#Anthro13-18: <https://www.ngds-ku.org/Presentations/Fitness.pdf>
- Kamal, S. A. & Khan, S. A. (2014). Primary-physical-education practices in Pakistan and England: health and safety perspectives. *International Journal of Biology and Biotechnology (Karachi)*, **11 (2&3)**: 401-419; full text: <https://www.ngds-ku.org/Papers/J33.pdf>
- Kamal, S. A. & Khan, S. A. (2015). Hairstyle, footwear and clothing for gymnastic activities in the primary-school setting. *Pamukkale Journal of Sport Sciences*, **6 (3)**: 46-64; full text: <https://www.ngds-ku.org/Papers/J37.pdf>
- Kamal, S. A. & Khan, S. A. (2018). Overcoming vitamin-D deficiency in

- male gymnasts during preteen years. *The Sky (International Journal of Physical Education, Health, Sports and Allied Sciences)*, **2**: 60-75 – Table-1: Morning inspections, p. 65, Table-2: Exercise plans, p. 66; full text: <https://www.ngds-ku.org/Papers/J50.pdf>
- Kamal, S. A., Manzoor, C. M. S. & Khan, S. A. (2013a, September 4, 5). Diet-based interventions and vitamin-D deficiency. *The First Conference on Anthromathematics in the Memory of (Late) Syed Firdous (ANTHROMATHEMATICS 2013)*, p. 14, Karachi, Pakistan: Department of Mathematics, University of Karachi and Hyderabad, Pakistan: Government College; extended abstract# Anthro 13-08: <https://www.ngds-ku.org/Presentations/VitaminD.pdf>
- Kamal, S. A., Rajput, M. K. & Ansari, S. A. (2016a). Gait analysis of 7-10-year-old children of Karachi from nutritional-status perspective. *International Journal of Biology and Biotechnology (Karachi)*, **13 (1)**: 13-25; full text: <https://www.ngds-ku.org/Papers/J41.pdf>
- Kamal, S. A., Rajput, M. K. & Khan, S. A. (2011b, November 19). 3-D-optical imaging in diabetic foot care of children. *Symposium on Diabetic Foot Care*, Karachi, Pakistan: Department of Orthopedic Surgery, Jinnah Postgraduate Medical Center, Najmuddin Auditorium, JPMC, p. 1, extended abstract: <https://www.ngds-ku.org/Presentations/JPMC.pdf>
- Kamal, S. A., Sarwar, M. & Razzaq U. (2015). Effective decision making for presence of scoliosis. *International Journal of Biology and Biotechnology (Karachi)*, **12 (2)**: 317-328; full text: <https://www.ngds-ku.org/Papers/J36.pdf>
- Kamal, S. A., Raza, S. K. & Sarwar, M. (2016b). Mathematical modeling of scoliosis indicators in growing children. *International Journal of Biology and Biotechnology*, **13 (3)**: 471-484; full text: <https://www.ngds-ku.org/Papers/J42.pdf>
- Kamal, S. A., Raza, S. K. & Sarwar, M. (2020b). Effectiveness of proposed risk indicators in scoliosis case finding. *International Journal of Biology and Biotechnology (Karachi)*, **17 (3)**: 517-530; full text: <https://www.ngds-ku.org/Papers/J56.pdf>
- Kamal, S. A. & Siddqui, K. A. (1986, December 27, 28). How to develop creative thinking and critical analysis? *Proceedings of the Second Workshop on Teaching of Physics*, edited by A. F. Hasnain, Karachi, Pakistan, pp 51-56; full text: <https://www.ngds-ku.org/Papers/C24.pdf>
- Kamal, S. A., Sultan, F. & Jamil, S. S. (2013b, September 4, 5). Sensitivity and specificity of screening tests. *The First Conference on Anthromathematics in the Memory of (Late) Syed Firdous (ANTHROMATHEMATICS 2013)*, p. 13, Karachi, Pakistan: Department of Mathematics, University of Karachi and Hyderabad, Pakistan: Government College; abstract#Anthro13-07: <https://www.ngds-ku.org/Presentations/Screening.pdf>
- Kamal, S. A., Wasim M. & Saeed, F. (2012, May 7, 8). A cardless identification and charge system. *The Seventh Symposium on Computational Complexities, Innovations and Solutions (CCIS 2012)*, Abbotabad, KP, Pakis-

- tan: COMSATS Institute of Information Technology (invited paper); extended abstract: <https://www.ngds-ku.org/Presentations/Cardsless.pdf>
- Kerr, Z. Y., Chandran, A., Nedimyer, A. K., Arakkai, A., Pierpoint, L. A. & Zukerman, S. L. (2019). Concussion incidence and trends in 20 high school sports. *Pediatrics*, **144** (5): e21092180; doi: <https://doi.org/10.1542/peds.2019-2180>
- Khan, A., Iqbal, Y. & Khan, S. (2017). Effects of terrorism on sports activities in Khyber Pakhtunkhwa: a case study of district Swat and Buner. *The Sky (International Journal of Physical Education, Health, Sports and Allied Sciences)*, **1**: 12-29
- Khan, H. A. (2019, August 18). The rising stars of Lyari. Karachi, Pakistan: Dawn, p. 4 (EOS Khozema, Z. (2015, October 11). The other side of Lyari. GC University, Lahore, Pakistan: Ravi Magazine
- Law, J. & Sanderson, T. (2019, September 5). Inside the Grêmio academy, home of Brazil's brightest young footballers. London, UK: Guardian (Yellow and Green Football); full text: <https://www.theguardian.com/football/2019/sep/05/gremio-academy-brazil-exciting-players-copa-libertadores>
- Mahfooz, S. (2019, April 17). Legendary star aims to forward football in Pakistan. Lahore, Pakistan: Dunya News; blog: blogs.dunyanews.tv/24621/
- Mendes, B., Ercin, T. & Uzun, K. (2015). Examination of flexibility and sprint performance values of adolescent footballers. *Turkish Journal of Sport and Exercise*, **17** (3): 16-20
- Mohammed, Z., Madani, R., Mokhtar, & Ali, B. (2018). Fat mass versus body mass index as relationship connectivity contributes to the prediction of the aerobic capacity growth level to monitor the football player weight. *Asian Exercise and Sport Science Journal*, **2** (2): 8-15; doi: <https://doi.org/10.30472/aesj.v2i2.44>
- Monitoring Desk (2019, September 8). Mountain girls pursue love for football. Karachi, Pakistan: Dawn, p.3 (national)
- Raheel, N. (2014a, April 6). Street child world cup: not the title, but Pakistani kids win a lot of hearts: The Express Tribune
- Raheel, N. (2014b, July 1). The footballer within every Lyarite. Karachi, Pakistan: The Express Tribune
- Samur, S. (2019). Process management in football youth development program. *Journal of Education and Training Studies*, **7** (9): 8-21
- Saether, S. A. (2018). Stress among talents in a football academy. *Sport Mont*, **16** (2): 3-8
- Shahin, A. (2014, December 8). La Masia: the pinnacle of European football youth academies – fact or fiction? Wasington, D. C., United States: Sbanton
- Siddqui, K. A. & Kamal, S. A. (1987, October 14-17). A survey of school and pre-university physics education in Pakistan. *Physics Education in Asia, Regional Physics Education Symposium and Aspen General Conference*, edited by Aidid, S. B., Ismail M. Z., Koh, A. K. & Singh, M. M., Kuala Lumpur, Malaysia, pp. 81-

- 89; full text: <https://www.ngds-ku.org/Papers/C28.pdf>
- Siedentop, D. (2003). *Introduction to Physical Education, Fitness and Sport*, Boston, United States: McGraw Hill, 6, 7
- Singh, D., Sharma, A., Dhawan, R. K. & Baghel, U. S. (2017). Doping in sports – a review. *Journal of Biomedical and Pharmaceutical Research*, **6 (2)**: 1-5
- Stafford, N. (2017, April 6). Former football club doctors must compensate player for kidney failures, German court rules. *British Medical Journal*, **357**: j1761 (news); doi: <https://www.bmj.com/content/357/bmj.j1761>
- Sugiyama, M., Khoo, S. & Hess, R. (2017). Grassroots football development in Japan. *The International Journal of the History of Sport*, **34 (17&18)**: 1854-1871
- Suzuki, N., Yamashita, Y., Yamaguchi, Y. & Armstrong, G. W. D. (1981). Measurement of posture using moiré fringe topography. *Moiré Fringe Topography and Spinal Deformity (Proceedings of the First International Symposium, Vermont, United States, September 22-24, 1980)*, edited by Moreland, M. S., Pope, M. H. & Armstrong, G. W. D., New York, United States: Pergamon, pp. 122-131
- Varga, D., Földesi, G. & Gombocz, J. (2018). Declared pedagogical values of coaches at Hungarian football academies. *Physical Culture and Sport Studies and Research*, **77 (1)**: 17-24; doi: <https://doi.org/10.2478/pcssr-2018-0002>
- Vestberg, T., Gustafson, R., Maurex, L., Ingvar, M. & Petrovic, P. (2012). Executive functions predict the success of top-soccer players. *PLoS One*, **7 (4)**: e34731; doi: <https://doi.org/10.1371/journal.pone.0034731>
- Wasim, M., Kamal S. A. & Shaikh, A. (2013). A security system employing edge-based rasterstereography. *International Journal of Biology and Biotechnology (Karachi)*, **10 (4)**: 613-630; full text: <https://www.ngds-ku.org/Papers/J31.pdf>
- Wilbert-Lampen, U., Leistner, D., Greven, S., et al. (2008). Cardiovascular events during world cup soccer. *New England Journal of Medicine*, **358 (5)**: 475-483
- Yaşar, O. M. & Sunay, H. (2019). A new football philosophy in Turkish football “Altinordu Football Academy” (chapter 5). In: Ö. Karataş, K. Kurak & O. Kizar (Eds.), *New Horizons in Sport Sciences*. Gece Kitaplığı (Gece Publishing): New York, United States & Ankara, Turkey, pp. 89-104
- Yılmaz, A. (2020). Sporun farklı eğitim kademelerindeki sporcu-öğrencilerin yaşam becerilerine etkisi: karma araştırma yaklaşımı (The effect of sport on life skills of athlete students in different education levels: mixed research approach). *Kastamonu Education Journal*, **28 (3)**: 1233-1243