

Pradas de la Fuente Francisco*, Carrasco Páez Luis, Izaguerri Arteaga Berta*, González Jurado José Antonio***, Herrero Pagán Rafael****, Godoy-Izquierdo Débora*******

**University of Zaragoza, Faculty of Health and Sports Sciences, Spain*

***University of Sevilla, Faculty of Educational Sciences, Spain*

****University of Zaragoza, Faculty of Health and Sports Sciences, Spain*

*****Spanish Table Tennis Federation, Spain*

******University of Granada, Faculty of Psychology, Spain*

A SELECTION AND FORMATION MODEL FOR SPANISH YOUNG TABLE TENNIS TALENTS

Abstract

Detection, selection and technification process for sport talents represent one of the most important research area in Sport Sciences. Actually, Spanish Table Tennis Federation, throughout Sport Technification National Program (PNTD), is developing a detection, selection and technification process for young players with the aim to develop a sport specialization in a correct form.

Different players are selected after the application of valid criteria in sport talent identification. In this sense, table tennis players selected must to present a specific profile, take into account physical, technical, tactical, psychological, anthropological and social characteristics, although adaptation capacity to table tennis training of these players is the main factor to take into account.

Table tennis training concentrations in high performance centers have a duration between four and ten days in which it follows a structured program. Also, multidisciplinary team composed by coaches, sport psychologists, ophthalmologists, sparrings (top-level table tennis players out of competition), and sport physicians evaluates to the players applying systematic and active methods.

With this work we want to give to know the features of a pioneer experience for young table tennis players in Spain, describing general and specific aims of the program and the main guidelines that are followed by the national coaches that are responsible of the PNTD.

Key words: *table tennis, talents, training, young players*

1. INTRODUCTION

The process of development of the career of an elite sportsman (sportswoman), it is difficult and laboriously and unfortunately put of the scope of any sportsman (sportswoman) who does not assemble the innate and acquired capacities necessary for a sports high yield. In the last decades, the selection and training of the sportsmen in early ages has suffered decisive quantitative and qualitative changes, passing from slightly demanding and punctual trainings, to daily and highly specializing trainings, producing an important advance of the yield to him, increasingly early, especially in those sports that need a high technical specialization, as the gymnastics, swimming or the table tennis, going forward this way, the ages of initiation (Lopez, 2000).

From this moment, a real revolution has been produced, especially in table tennis, where the learning of the different skills they suppose an adjustment and particular adjustment to a not habitual way and to the utilization of an implement, which must strike the mobile one that moves for the space to high speeds and with a quantity of certain rotation. This early specialization, it has changed notably the parameters of the elite sport and the methods of training, must adapt to early ages and to evolutionary periods and of psychobiologic determined ripeness. This way, from the point of view of

the sports yield, a parallel increase has taken place in the investigation applied to the table tennis, orientated fundamentally towards (Baur, 1993):

- ▶ The precocious selection of sports talents trying to establish the scientific bases of a sports exploration, based on the precocious identification of the future champions.
- ▶ The optimization of the yields by means of the analysis of the biological, technical, methodological and psychological factors that determine the sports yields.
- ▶ The promotion of the talent by means of the promotion of the curriculum.

These processes of detection, selection and technification of talents are probably one of the big areas of investigation of the sport (Solanelas et al., 1996), and they us would justify that the differences between a champion and the others, they might assume, to a great extent, to the way of selecting the sportsmen from the base.

The detection and selection of talents in table tennis is not an easy task. From the Royal Spanish Federation of Table Tennis, concretly across the direction of the National Program of Sports Technification (PNTD), it removes working a decade, purifying a specific model of detection - selection, constructed attending to diverse variables as the age of the sportsmen, the degree of acquisition of specific skills, etc., in order to realize a suitable process of selection, orientated towards a sports early specialization (Blázquez, 1990).

In short, about what it treats itself it is of constructing a systematical process, across which there are identified the capacities, skills, psychological disposition(regulation) and social factors that constitute necessary conditions to assimilate the charges of training, related to the aims (lenses) corresponding to the stage of formation in which there is the sportsman (Leyva, 2003).

2. METHODS

The fundamental aim of the PNTD is the detection - selection of those subjects that stand out, already be for a better assimilation and / or yield, and that consequently present a major sports talent. The determination of this level of capacities, it is based on different evaluations, which if they are adapted, can allow us a prediction of what might be expected from a player depending on his initial situation of game, without forgetting in no moment of, besides his individual capacity (genetics or acquired), the motivations of the sportsman, of the social environment and of the interaction of these conditions.

To take to end this program, they have been selected in the first phase of intervention, to those individuals who show interest for his practice. In the second phase, diverse interventions are realized by these sportsmen, already be training camp and / or competitions, being selected again, to those that close to presenting a specific profile for the practice of this sport, besides were possessing a potential determined as for physical, psychological, biomedical and social characteristics. Definitively, it is tried to predict in what environment and which are the ideal characteristics, to be able to develop to the maximum the qualities and specific capacities of the Table Tennis.

The principal aim of the PNTD is of initially identifying (to detect), to choose (to select) and later to train, to those sportsmen who could develop a potential of adjustment to the training and a high capacity of technical - tactical learning, to tackle in ideal conditions, the later stages of training (Léger, 1986).

In our case, the detection begins in the first phases of the process of sports development of base (categories youngest children and fries), process during which the adjustment and general initiation will take place to the physical - sports concrete activity, trying to take advantage of the potential of the subject and trying to create a feeling attraction on the part of the child towards the Table Tennis (Lopez, 2000).

The later process is the selection of the sports talent, process of evaluation for which the sportsmen who show major specific potential for the table tennis (infantile and juvenile categories), are chosen and directed to a specializing training which prior aim is the search of the maximum sports yield.

Definitively, the intention is it of consolidating from the basic foundations of the sports training, to those individuals who present a set of powers and / or attitudes, or a natural aptitude (Aguila et al., 2000), in order to reach a precocious ideal specialization in this sport. We are speaking about detection, identification, selection and technification of sports talents (Lopez, 2000).

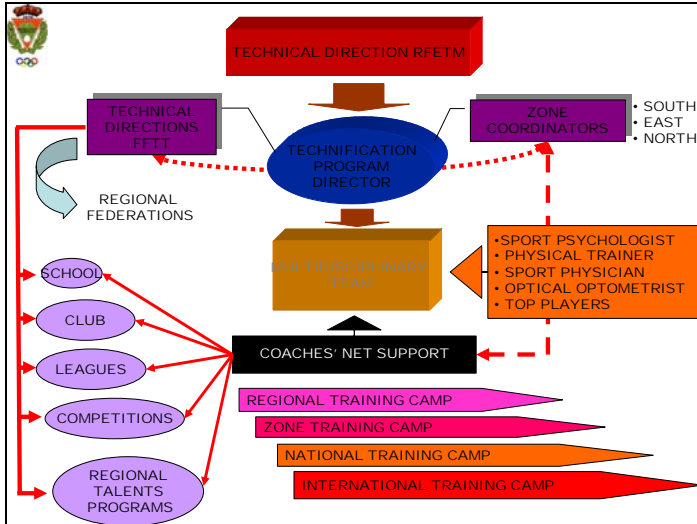


Figure 1 Structure of the model.

The PNTD or Spanish model (figure 1), depends on the Technical Direction of the Royal Spanish Federation of Table Tennis and is financed jointly in 70 % by public (funds) across the Top Council of Sports (C.S.D.), competent organ in sports matter, and in 30% for the private capital and / or own resources.

The organizational structure of the PNTD is shaped by the Director (national trainer and specialist in Sciences of the Physical Activity and the Sport), in coordination with three Codirectors or zonal persons in charge (trainers of the maximum national category and expert in the area of the Sciences of the Physical Activity and the Sport), located in the national geography of a strategic way in Zaragoza, Valladolid and Murcia (figure 2).



Figure 2 Distribution of the zonal people in charge

The program is designed to be employed at total coordination with the Technical National Direction, the Young men's (women's) National Team's Director and with the Technical Directions of the different Territorial Federations, extending this way to the maximum the spectrum of the intervention.

To take to end the sportsmen's (sportswomen's) selection, Spain is divided in three big zones of performance (figure 3):

- South Zone, composed by 7 regions: (Andalucía, Islas Canarias, Castilla La Mancha, Extremadura, Murcia, Ceuta and Melilla).
- East Zone, composed by 4 regions: (Cataluña, Aragón, Valencia and Islas Baleares).
- North Zone, composed by 8 regions: (Castilla y León, Galicia, Asturias, Cantabria, País Vasco, La Rioja, Navarra y Madrid).

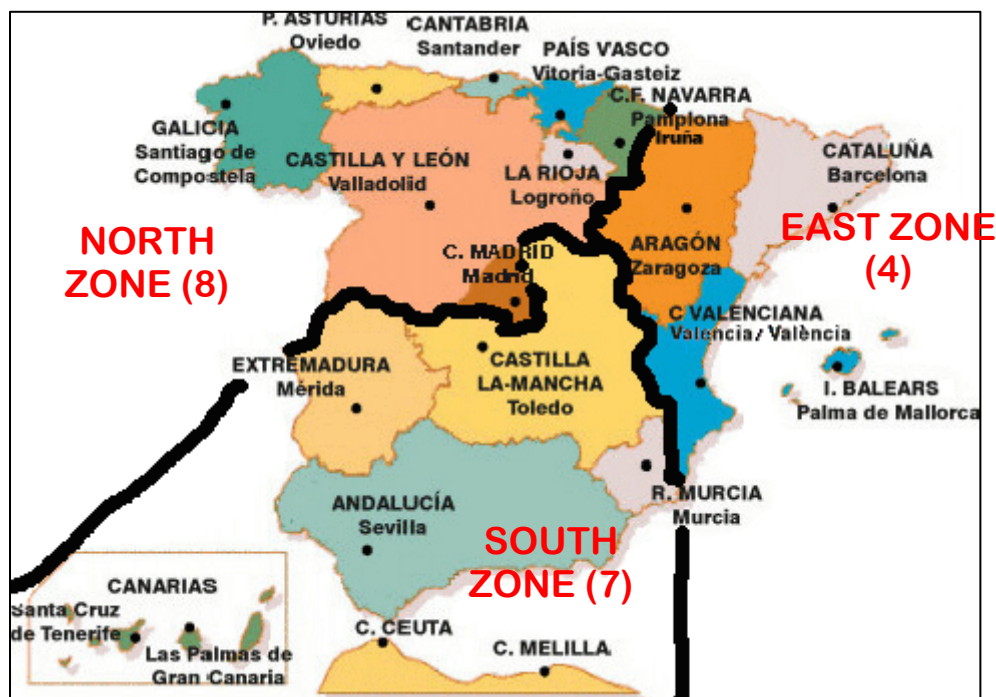


Figure 3 Performance zones

The different performances (training camp, evaluations, ...) they are carried out in High Yield Centers and / or in Technification and Sports Specialization Centers, located in three zones of intervention: north zone (Valladolid), south zone (Granada, Córdoba and Murcia) and east zone (Barcelona). These activities, they are directed by the responsible zonal codirectors of the National Program of Sports Technification, in collaboration with a multidisciplinary team composed by a trainer, a sports psychologist, an optical optometrist, different players of high level and a doctor specialist in sport's medicine.

The initial methodology used for the captation of talents, it is the natural selection, the individuals choose this sport, already be for family tradition, random, or for other motives, in this moment the detection will begin and the different interventions will begin on the sports participants.

From here, there begins the second stage, the selection, as process in which they are individualized to those sportsmen provided with talent and with favorable attitudes for the table tennis, with the help of methods and of test scientific valid (Nadori, 1983), close to the development of others tests more specifics for our sport.

In this phase, there is applied an active and systematical methodology. All the players pass to be evaluated by means of a battery of proofs, of medical, physical, optical, psychological nature and technician - tactics, to verify if really these young players, possess these capacities and natural attributes necessary to be able to reach, to posteriori, high yield in this sport (Salmela et al.. 1983), though the discovery of the talent does not constitute in the same rapid and fast progress (Kondric, 1996), but only a hypothetical potential dimension.

Once detected the possible subjects it is still the model of Kunst and Florescu (1971), mentioned by Bompá (1987) and modified for our sport, on the principal elements to

bearing in mind to select a sportsman. The realized valuations are in two places at the same time in four areas:

- The motive capacities.
- The psychological capacities.
- The visual skills.
- The biometric qualities.

Definitively, which is looked is the biophysics study of the selected individuals, by means of a series of evaluations, of the motive, psychological, optical and biomedical profile, to be able this way to determine, to short or half term, which is the most specific for this sport.

On all these aspects previously mentioned the PNTD is based. The theoretical raised model consists of 6 different interventions to detect and to select the sportsmen who present a major authority of the specific skills of our sport. These evaluations are gathered in the following areas:

A. Control of the specific skills

For its valuation there were designed a series of *technical - tactical exercises* of low complexity and adapted to every age, where it is evaluated, not the most correct technical execution, but the innate skill or the know-how, to be developed opposite to the own skills of this sport. The technical - tactical elements that are valued are mentioned later:

- ▶ Execution of services.
- ▶ Execution of the forehand stroke and of reverse.
- ▶ Return of services (the rest).
- ▶ Execution of blows of assault.
- ▶ Execution of the cut of right and of reverse.
- ▶ Displacements.
- ▶ Basic tactical thought.

B. Battery of physical tests

The equipment of specialists in the area of the physical activity chose for this evaluation, a series of physical tests but without an exclusive purpose, but as a possible determinant that might affect positively on the future performance of the chosen players. The tests that were selected were:

- ▶ Flexibility of the trunk in sat position.
- ▶ Explosive force of the low train (CMJ and SJ).
- ▶ Simple reaction speed before a visual stimulus (figure 4).
- ▶ Displacement speed in 20 meters.
- ▶ Specific speed.
- ▶ Course navette.
- ▶ Cyclical speed of top members.
- ▶ Manual Dinamometry.



Figure 4 Reaction time and specific displacement test.

The election of these tests and not of others, it has been for its easy aplicabilidad and its confirmed reliability. Having into counts the predominance of genetic factors in the manifestation of rapid and coordinated movements (Porta et al., 1996), in the technical basic actions of this sports discipline, the selection of the above mentioned tests they will be able to predict to us the potential performance of the sports young men, in order to realize an ideal early detection.

C. Psychological valuation

From the psychological perspective one tries to know some characteristics of the individuals that form a part of the project, considering, from the familiar and social environment, up to details and own features of the personality of every subject. For it they are realized:

- ▶ Personal interviews.
- ▶ Emotional state's studies.
- ▶ Study of sports habits.
- ▶ Study of the ratio concentration / easing.

D. Social determinants

In this point, the interest was centring on knowing the social reality of every individual, that is to say, the real conditions in which the sportsman is, from the club to which it belongs, up to the sports facilities and its degree of availability (Campos et al., 2000).

As determinant factor, there is analyzed the possible availability of different specialists, as sports doctors, level players, psychologists or graduated technical personnel, close to the level of knowledges of the trainer with regard to the specific sport, the physical general activity and the health, as variables that determine the later process towards the high yield.

E. Study of the visual skills

Among all the factors that influence in the sports yield table tennis, one of the most important is the vision. This aspect allows us a sports practice without limitations, looking for the specialization of certain visual determinant skills in this sports modality. In our case the following visual parameters are studied:

- ▶ Visual keenness that values the aptitude of the visual system to differentiate objects to certain distance.
- ▶ Function of sensibility to the contrast.
- ▶ Binocular distantly behaviour.
- ▶ Close point of convergence on the object of interest.
- ▶ Accommodating flexibility or control of the approach.
- ▶ Extent of merger related to the spatial location and the depth.
- ▶ Estereopsis or quality of binocular vision.
- ▶ Ocular Motility: stability of fixation, ocular follow-ups and fixation changes without loss of brightness.
- ▶ Visualization.

Its importance takes root, in the context of the sports training, in providing the sportsman orders on where, when and how looking (Bard et al., 1975, 1976; Ripoll, 1987).

F. Medical evaluation

Continuing part of the model mentioned by Bompa (1987), the criteria that bear sound in mind in the biomedical paragraph:

- ▶ *The health*, medical evaluations are realized during the training camp. They consist of carrying out a clinical history, an electrocardiogram and espirometría of rest, a biochemical analysis and haematologyc, a study of the locomotive device and a effort test in rolling tapestry with electrocardiographic monitoring and gas analysis (just to the subjects of major age), realized by specialists in sports medicine, where one tries to detect possible physical or organic problems.
- ▶ *The morphologic study* of every individual, having in consideration the values of the height, weight, perimeters, diameters, plaits and length of the extremities.

Besides, for the attainment of the aims raised in the National Program of Sports Modernization, it becomes necessary to consider other more general, but not less important aspects for it, of organizational and methodological type, considered necessary for the correct functioning and ideal utilization of the programmed activities. As more prominent aspects, later we relate some of them that we consider to be relevant:

1. Training place selection

The High Performance Centers (CAR), Sport Technification Centers (CTD) and/or Sport Specialization Centers (CETD), where every last-generation technical means are available, just as the ideal infrastructures for training, have been selected for that purpose, because:

- All necessary facilities are located inside a single sport complex, absolutely separated from outside and surveillance and security is assured 24 hours a day.
- Bedrooms, dining-room, training room, gymnasium, relaxation rooms (sauna, Jacuzzi), library, cafeteria, computer room, medical assistance, TV-room, etc, are available.

2. The players selection

We will consider different basic criteria just as: the national ranking, the evolution of national and international results, the skills acquisition, the capacity to learn, the attitude in competition, the physical and psychological abilities, and the educative behaviour.

3. *Main objectives of the meeting*

To carry out a technical-tactical work (stressing the importance of the basic blows of right/back), with intensive exercises with sparrings, multi-balls, and with videos. The following selection of the players who will assist to the meetings and/or international competitions will be done from the results of these activities.

4. *The quality training*

A special interest will be taken on this section from the first meetings that the players take (the youngest and the beginners), keeping in mind essential aspects just as the evolution of the sportsmen, personal features, training level, learning skills, etc. A number of different exercises will be taken under the supervision of the trainers and with the help of sparrings (high-level players), working intensively with groups from two to four children.

5. *The multilateral team*

In spite of trainers are in charge of the organization the structure and development of the meetings, we count on a very professional human team composed of: trainers, sparrings, fitness coaches, psychologist, doctors (experts in sport-medicine and ophthalmologists), masseur and spare time leader.

6. *Timetables and norms.*

For the good functioning of the training camp there will be indispensable the fulfilment of a few schedules and procedure, established by the trainers, and that from the moment of the revenue to the activity the sportsmen will know. The training camp are in the habit of ranging between four and ten days.

7. *Feed-back with the trainers.*

Before and after the training camp there are established contacts (meetings, conversations or reports) by the trainers of the clubs of the players selected in order to inform him about the sportsman, to unify the process and the direction of the training. Besides, from the PNTD, there are programmed formative activities directed by trainers who work with young men (women).

3. CONCLUSIONS

The PNTD is a show experience, pioneering in table tennis, very positive from the methodological point of view, bearing in mind the rigor that has followed and the confirmed experience of the multidisciplinary team that takes part.

One could have stated an improvement in the yield of the sportsmen included in the worldwide PNTD, supported on an integral selection, based on changeable technical - tactics, physical, psychological, biomedical and social.

All these elements that have been scientifically analyzed in the sportsmen seem to be an important fact to approach the high sports yield in table tennis, dividing from a global perspective and not being studied from an isolated comprehension.

At present, scientific methodologies are applied to investigate more in depth this sport. They are designed and applying more specific tests, increasing this way in major measurement the scientific rigor. Also the quality of the sample is trying to increase object of study, in order to be able to seat the bases and the necessary means, to realize a good detection and an excellent evolution, as for planned and methodical trainings.

On the basis of the exposed thing, we must emphasize that there exist multiple factors that delimit the human yield. Every individual has a few particular and innate characteristics of biological and psychological type framed and submitted to the environmental influence, factors that from the PNTD have tried to be controlled.

Finally, we think succeeded the design of the PNTD to predict the future yield of the sports young men who take part, studying it entirely, the maximum of factors involved in the above mentioned yield, though there is imposed the need to realize a longitudinal study to repeat the obtained results.

4. REFERENCES

- Aguila, C., Casimiro, A. J. (2000). Reflexiones acerca del entrenamiento en la infancia y la selección de talentos deportivos. *Revista digital Lecturas: Educación Física y Deportes*. n° 21. Buenos Aires. <http://www.efdeportes.com/revista/Año 5>.
- Bard, C., Fleury, M. (1975). La strategie perceptive et la performance sportive. *Journal of human movement studies*, 3, 163-183.
- Bard, C., Fleury, M. (1976). Analisis of visual search activity during sport problem situations. *Journal of human movement studies*, 3, 214-222.
- Blázquez, D. (1990). La iniciación deportiva y el deporte escolar. INDE. Zaragoza.
- Baur, J. (1993). Recerca y promozione del talento nello sport. *Rivista di Cultura Sportiva*, n° 28-29, 4-20.
- Bompa, T. (1987). La selección de atletas con talento. *Revista de Entrenamiento Deportivo*. Volumen 1. n° 2. 46-54.
- Campos, J., López, J., Vernetta, M., Morenilla, L., Pancorbo, A. (2000). Indicadores para la detección de talentos deportivos. Serie investigación en ciencias del deporte. N° 3. Ministerio de Educación y Ciencia. Consejo Superior de Deportes. Madrid.
- Kondric, M. (1996). Un sistema práctico para la orientación de los niños en el tenis de mesa en la República de Eslovenia. *Internacional Journal of Table Tennis Sciences*. N° 3.
- Léger, L. (1986). Recerca de talents en sport. *Apunts de Medicina del Deporte*. 23. 63-74.
- Leyva, R. (2003). La selección de talentos deportivos. Criterios para asegurar su eficacia. *Revista digital Lecturas: Educación Física y Deportes*. n° 61. Buenos Aires. <http://www.efdeportes.com/revista/Año 9>.
- López, J. (2000). Detección y selección de talentos deportivos: experiencia aplicada. Encuentro para técnicos del Centro Andaluz de Tecnificación Deportiva. Instituto Andaluz del Deporte.
- Porta, J., Cos, F., López de Viñaspre, P. y Bonastre, R. M. (1996). La valoración de movimientos rápidos y coordinados. Su interrelación y capacidad de selección de talentos deportivos. *Apunts Educación Física y Deportes*. N° 46. 53-60.
- Ripoll, H. (1987). Strategies oculo-motrices impliquees dans l'execution des habilites sportives de precision. En Ripoll, H. et Azemar, G. (Ed.) *Neurosciences du Sport*. Traitement des informations visuelles, prises de decision et realisation de l'action en sport. Paris. INSEP.
- Salmela, J. H., Regnier, G. (1983). A model for sport talent detection. *Sports: Science periodical o research and techology in sport*. Octubre. 1-8.
- Solanellas, F., Pedró, J. (1996). Los centros de tecnificación. Búsqueda de talentos. *Apunts Educación Física y Deportes*. N° 44-45. 76-79