

Total Reaction Screen

Core Concepts & Benefits in Personal Development

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Introduction

The Total Reaction Screen (TRS) is a training and coaching aid designed by Australian Sporting Innovations. The TRS has been designed to improve reaction and response times for sporting participants of all ages and skill levels. The TRS is best applied in sports and activities where responsiveness and reactivity are an essential component of mastering skills and meeting a high skill ceiling.

This paper contains explanations of how the TRS works and how it will benefit you. A small number of training drills are available on the website under **Manual & Drills** for various sports. These drills are a subset of the extensive range of exercises and drills that can be applied.

To obtain the full benefits of understanding and utilising the TRS please take the time to read this paper prior to use. Continued use of the TRS will give you many hours of enjoyment and satisfaction with your, or your participants' personal improvement.

The Objective and Working of Screen Use

About the TRS

The TRS consists of two vertical stands that support a horizontal crossbar. Spaced along the crossbar are a series of hanging screens. The hanging screens are made of thin flaps of spaced, stripped vinyl screen material attached to each side of the crossbar by a track. The screens either side of the crossbar are staggered so that they offset the spaces in the strips on either side.

When an object comes into contact with the screen, the strips of screen material will flex, twist and part and allow the object to pass through. The curtain screen is unattached at the bottom to permit objects travelling along the ground to freely pass under the screen.

In essence, the TRS is a screen which restricts the visibility of users standing either side of the screen. The restriction of vision reduces the time in which the receiving participant must react and respond to another participant's action.

How is the TRS used?

Using a simple example, when a free kick is awarded in football, the goalie stands in front of his goal ready to defend. The attacker stands on the penalty spot in front of the goalie and tries to beat the goalie by striking the ball past him into the goal.

The goalie sees the striker preparing to kick, watches his sight lines, reads his body language and sees the ball leaving the striker's boot in the direction of the goal. The goalie has the opportunity to see and take into account all of these signs in determining what actions he needs to take to defend his goal.

Now, place the TRS between the goalie and the striker. The striker is now blocked from the goalie's vision by the screen. The goalie does not have the benefit of seeing all the preparatory steps and signs being displayed by the striker and must rely on other processes to effectively protect the goal.

This time, instead of seeing the ball leaving the strikers boot, the first time the goalie sights the ball will be when it passes through, under or over the screen. The goalie's time to react and respond has been reduced, and the goalie's senses must be heightened to attune to the lesser time available to protect the goal.

Reaction Time and Response Time

Reaction time is the interval time between the presentation of a stimulus and the initiation of the muscular response to that stimulus.

A primary factor affecting a response is the number of possible stimuli, each requiring their own response, that are presented. If there is only one possible

response (simple reaction time) it will only take a short time to react. If there are several possible responses (choice reaction time) then it will take longer to determine which response to carry out.

Reaction Time itself is an inherent ability, but overall Response Time can be improved by consistent practice.

Response Time is the sum of Reaction Time plus Movement Time. Response Time involves a variety of factors including practice, experience, anticipation, strength, fitness and coordination.

Training for Improvement

There is plenty of evidence that strength training, aerobic and anaerobic development and sports skills should be practiced in a manner that simulates game or event conditions as much as possible. Movements that are practiced in game-like situations are the ones most likely to be used in competition.

The predominant advantage that the TRS has over other reaction and response improvement training methods is that its use involves game related skills and drills. The TRS allows participants to learn and improve their skills and reaction and response time so that they will be able to replicate these movements and actions in gameplay.

By itself, the TRS will improve skills and reaction/response times, however to obtain the maximum benefits from the system, users should incorporate a training regime which includes strength training, aerobic and anaerobic development. The higher the participants' level of fitness, the longer they will be able to perform at the enhanced levels created from usage of the TRS.

Benefits of Use

The TRS will benefit participants of any activity in which reaction or response time form a critical component of the participant's performance. To understand this proposition, it is necessary to understand the underlying concept of the TRS' benefits.

Use of the TRS requires concentration and attention that is not otherwise required by standard training drills. The first sighting of the position and direction in which the object is seen by the user is when it passes through, under or over the screen, thus reducing the time in which the user has time to react. One of the most common oversights in training is the failure to adequately teach the need for preparation.

To perform successfully at the standard required by the TRS, it is necessary for the user to be fully prepared for the emerging object, and to be able to catch, block, return or perform another action. This preparatory step includes adoption of a position of athletic balance. Having developed natural preparation skills and

applying the requisite degree of focus and concentration level alone takes the user to another level.

By taking this next step of improving a participant's reaction and response times, they will continue to advance in their overall skill level. Upon achieving reaction and response improvements to a desired standard, the user may move on to the next level of challenge. This is a path of continuous improvement and is attained by lessening the participants' distance to the screen, thereby reducing their reaction or response time further.

Who can benefit from the use of the TRS?

A major benefit of the TRS is that it assists participants of all skill levels. Whilst the TRS was primarily designed for ball sports, it is clear that usage of the TRS reaction and response concept has a wide-ranging application across all types of sports.

Measurement of Improvement

In all uses, the improvement in a participant's reaction/response time can be readily measured by:

- i. the number of times the participant is able to successfully block, play or catch the object;
- ii. the closer the participant is able to play to the TRS.

The goal of every participant in sport is to improve their skills and standards of performance and to consistently play to the best of their ability. The TRS is the training system that can help them achieve this goal.

<p>WINNING IS THE SCIENCE OF BEING TOTALLY PREPARED George Allen – American Football Coach</p>
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Understanding the Concept

The TRS is designed to upgrade athletic skills through response and reaction time improvement. To understand how this is possible it is necessary to understand what is referred to as the “comfort zone ideology.”

The comfort zone is a behavioral state within which a person operates in an [anxiety-neutral condition](#), using a limited set of behaviors to deliver a steady level of performance, usually without a sense of [risk](#). A comfort zone is a type of [mental conditioning](#) that causes a person to create and operate within mental boundaries.

Such boundaries create an unfounded sense of security. Like [inertia](#), a person who has established a comfort zone in a particular axis of his or her life, will tend to stay within that zone without stepping outside of it. [To step outside their comfort zone, a person must experiment with new and different behaviors, and then experience the new and different responses that occur within their environment.](#)

Stepping out of the comfort zone raises the anxiety level; engendering a stress response. [The result of this is an enhanced level of concentration and focus - the Optimal Performance Zone - a zone in which the performance of a person can be enhanced and in which their skills can be optimized.](#)

In terms of performance management or development, the objective of the coach or trainer is to cause the person to enter the optimum performance zone for a sufficient period of time so that new skills and performance levels can be achieved and become embedded.

Australian sporting icon Sir Donald Bradman achieved greatness by training outside of his comfort zone. He did this by using a cricket stump to hit a golf ball up against a corrugated water tank to give variations in ball angle speed and bounce whilst having to strike a smaller ball with a narrower “bat”. It is this concept Australian Sporting Innovations has adopted in the design of its training aids.

The directors of Australian Sporting Innovations have years of experience in sport and have gone outside the boundaries of traditional skill training to present the Total Reaction Screen. ASI is extremely confident of the success of our product to improve athletic performance.

ASI is conscious of the importance of skill drills for individuals and team groups, i.e., left/right side attack/defence, first, second receivers, short side players etc., depending on the sport. ASI is also aware of the importance placed upon game related skill drills that allow players to participate, learn, and hopefully improve their

skills during these drills, so that they will be able to duplicate and action these skills when competing in actual games.

The importance of small sided games and similar skill drills under pressure, have, for some time now, been an integral part of individual and team training at junior and senior level.

ASI believes that in many cases this method of training can restrict a player's ability to improve and advance to a higher level, or even an acceptable level of execution of these skills. The preface of this theory is based upon the belief that all players in most sports have different levels of natural ability as well as skill level.

Consequently, there will be different responses to pressure situations applied to individuals. Unfortunately, it follows that neither the best response nor the best result will be gained from skill drills.

ASI believes that players with more natural ability than others can be "growth restricted" by others not without similar levels of ability. ASI also feels that the players with less or little natural ability may not improve their skills at all from standard forms of training.

The challenge for ASI was to create a coaching and training aid designed to produce pressure practice conditions greater than those encountered during a game, where all players were out of their comfort zone, and were put in the position of needing to apply game related skills to produce successful results in game related outcomes.

ASI has developed a training aid to produce pressure in artificial environments that aren't game related, which require game related skills to be performed to produce the required standard of outcome.

It is believed that the artificial environment created by the training aid will increase the pressure for all players to improve many facets of the skills required to improve or become a top line athlete. The ASI training aid produces an environment which places players into situations to use, practise, correct, and refine many skills.

The intensity and pressure created, cannot be achieved in any other game related drill, or indeed, even a game itself!

Greater anticipation, reaction, timing and decision making achieved from consistently using the TRS are essential components required for a player to execute skills automatically. The TRS coaching and training system is a product specifically designed to take sportsmen outside their comfort zones and assist them in achieving new levels of skills and performance.

Benefits of Use

From schoolchildren to the accomplished and professional athletes, the TRS offers the opportunity of self-improvement of skills and capabilities.

From an early age, children can gain and improve hand-eye coordination by using the TRS for simple drills which will keep their attention and achieve this most important foundation of sports.

Older children and novices, who already possess adequate hand-eye coordination, will quickly learn the necessity of balancing themselves in preparation and the capacity to focus and concentrate whilst learning the skills required from drills applying game-like skill requirements.

All too often members of this category are presumed to know and understand the essential characteristics that are required to enable them to properly apply these skills as required. The benefits of learning the need for preparation, concentration, anticipation and improvement of their reaction and response times will result in personal improvement and enjoyment in their chosen sport.

The accomplished or serious competitor already understands the need to master the skills but may well have never been able to advance to the next level because the training techniques used did not focus on the essential elements required to improve these skill levels and the decision-making processes necessary at the higher level. By honing the skill level through improved reaction/response times, the opportunity to perform on the greatest stage awaits.

The rarefied atmosphere of professional athletic competition fills the dreams of all aspiring athletes. In truth though, most players competing in this arena are not performing consistently to the standards to which they are capable. It may be an error or poor choices under pressure that contribute to the deficiency, or perhaps slower reaction/response to an opportunity, or even a simple failure of a basic skill.

Whatever the cause though, it happens, and that failure can be catastrophic to a team's or an individual's success. Consistent TRS training offers the professional the opportunity of "upping the ante" by training with game related skills in an enhanced "pressure cooker" environment and achieving their Optimal Performance Zone level to take onto the field and replicate in game time. Every available advantage at this level must be utilised and the advantages of the TRS training benefits are compelling.

Schools & Children

A 2017 article through Macquarie News Services reported that less than 25% of children have adequate hand-eye coordination and, former top five ranked Australia now ranks a poor 21st out of 34 countries in the western world.

Sadly, this emerging trend is no doubt exacerbated by the boom in computer styled and augmented reality games and the declining numbers of children with an interest in physical activities and exercise. In parallel to this phase, is the escalation of obesity in what were once healthy schoolchildren. Whilst diet plays an important role in the fight against obesity, its essential partner is exercise.

Why is this happening and what can be done to overcome the current situation?

We suggest there are many contributing factors that need to be considered and adjustments applied before there will be a reversal of children's present attitudes to exercise and involvement in sports.

Why is schoolchildren's involvement in sport so essential?

We consider these are many, but they include:

Fitness and health benefits

Exercise for children creates leaner bodies with stronger muscles and bones and improves fitness. Fitter children face less risk of suffering from the lifestyle diseases and other potential emotional issues than do obese children.

The three pillars of fitness are endurance (developed through aerobic activity), strength (increased by specific exercises to help tone or strengthen muscles) and flexibility (created by stretching and allowing muscles and joints to bend and move easily through their full range of motion).

Wellbeing

In most cases, preventing children from becoming overweight or obese is dependent on a healthy lifestyle of exercise and a healthy diet. The healthy diet issue requires education of both parents and children to avoid fat-filled fast food, pre-packaged meals and processed foods.

Type 2 diabetes, high blood pressure and high cholesterol levels were once considered adult diseases, but obesity in children can also place them at risk of these medical issues now and in the future. Obese children may also suffer at the hands of bullies, teasing and rejection by peers, with those children suffering resultant emotional and mental issues.

Coordination / skill achievement

It is a fact of nature that some children are gifted with coordination whereas other children lack the most basic coordination skills. Many children do not play sports because they feel they are not good enough or are humiliated by their lack of ability.

It is arguable that participation in sport is reduced because some people are embarrassed at their lack of ability and the prospect of being ridiculed for their inability to take part in a match to an acceptable standard. Imagine the prospect of greater sport participation through the improvement in participant's confidence and self-esteem.

Discipline – personal application – rules & regulations

Playing sports requires personal discipline as well as the requirement to participate within the constraints of rules and regulations. Lessons learned in this way flow through to acceptable behavioural standards applicable in society.

Mateship and camaraderie

To play alongside teammates or to play individually against opponents creates bonds and relationships that can last a lifetime. Apart from health, there is possibly no greater gift than lasting friendships.

Peer acceptance

Without doubt, children are the harshest critics. If a team-mate fails, they soon let them know. Peer pressure singles out the under performers and drives them from the sport. A large proportion of children driven from the game are as a result of ridicule and low self-esteem.

Continued use of the TRS has the capacity to benefit the beginner, novice and the elite alike. By teaching them the fundamentals of concentration, preparation and anticipation, their reactions improve as do their skill levels. With improvement in skill levels comes a change in their level of self-esteem and acceptance by their peers.

Character development

Character development arises through life's experiences and there is arguably no better opportunity to gain experience than through learning and achieving with your mates in the sporting arena.

Career / business connections and opportunities

Successful professional athletes don't have the monopoly on a lifestyle built around sporting contacts. Many coaches, trainers, physios, dieticians, administrators etc etc owe their lifestyle to their sporting days. Contacts made, and friendships formed

in schooldays and through involvement with sporting clubs are regularly the creator of career and business opportunities.

Personal satisfaction in achievement

Is there any better personal feeling than to know that you have applied yourself, tried your hardest and achieved your goal? Involvement in sport gives us all the opportunity to experience this feeling.

So, what is the role of the TRS in improving health and wellbeing of children?

The TRS when used as a training aid for school children offers an interesting and fun way to exercise and improve fitness levels. It is particularly beneficial for those children with learning or attention difficulties as it maintains their interest in involvement throughout its use. Exercise drills can be used in game like situations to make its use even more interesting and entertaining whilst improving a child's hand/eye coordination as well as their response and reaction times.

The TRS is designed to focus the user's attention on what is about to happen.

This requires preparation by the user and concentration which in turn leads to balance and anticipation. The aggregation of these fundamentals results in improvement in reaction/response times and in so doing ensures the users limb/eye coordination is improved.

Involvement and Encouragement

A contributing factor of children not embracing exercise is that children are unresponsive to most exercise programs that are offered.

The Sports Master of Churchland's School in Perth, Western Australia reported that the 7 to 11 year old students using the TRS, enjoyed training with it and that it held their interest throughout the sessions due to the need to concentrate and apply themselves to the challenges presented by the device.

Existing exercise programs may not be accepted by children as they are too mundane and fail to retain their interest. Trialling the TRS with children has shown that they find the concept appealing and interesting. They enjoy using it and want to use it. The results are:

- children participating in exercise without objection;
- children enjoying what they are doing – just having fun;
- children gaining skills and improving coordination.

Reluctance of Involvement

Several children do not play sports because they feel they are not good enough or are humiliated by their lack of ability. It is arguable that participation in sport is reduced because some people are embarrassed at their lack of ability and the prospect of being ridiculed for their inability to take part in a match to an acceptable standard. Imagine the prospect of greater sport participation through the improvement in participant's confidence and self-esteem. It is our confident belief that the TRS will contribute to this achievement.

Sporting Clubs

Sporting clubs are the grass roots of any sporting nation. At an introductory level, beginners would benefit from the use of the TRS with their improved coordination and reactions assisting them in their growth within the game. Continued use of the TRS throughout their sporting days would result in an extended period of interest and participation and create a stronger, more competitive standard of play.

The more people that play, and the higher standard a game is played, creates more interest in the sport and a greater following. The greater the exposure, the more funds are generated and the more the clubs are financially advantaged and not dependent on external support.

From an elite perspective, the higher standard a game is played at, then the higher public/spectator interest there is in the game. Greater following opens the doors to better media coverage and recognition as well as funding opportunities. The benefits then flow on down to the feeder clubs and grass roots of the sport.

What standard of sportsman will TRS training benefit?

From novices to budding champions, the TRS offers a range of benefits in all sports where response and reaction times are an essential element of that sport. Regular training with the TRS will result in improved:

- Preparation;
- Focus and Concentration;
- Balance;
- Anticipation;
- Hand/eye coordination;
- Peripheral vision;
- Awareness and;
- Response and Reaction Times.

Regular training using the TRS, under game related drills and scenarios, will allow the athlete within, to choose which response is the best to be applied in each situation and, in so doing, take their skills to a new level with higher standards of performance and better results.

Use of Multiple Screens

The use of multiple TRS, either linked together or freestanding, greatly increases the number and variety of drills available to both coaches and players. Multiple screens allow coaches to progress the drills to further simulate game situations.

Some sports are better suited to a particular way in which multiple TRS can be used. For example, the Rugby codes, Football and Hockey are well suited by a number of TRS placed adjacent to each other in a straight line.

This allows users to move up and down either side of the screen line passing, kicking, hitting the ball between each other. On reaching the end of the screen line they return in the opposite direction thereby gaining practice on both left and right sides. A group of players can collectively use the screens and vary to whom the ball is passed or kicked. Pairs can “play against” each other or a single user to create a further pressured environment.

In all sports involving goal-keepers (eg. Football and Hockey) benefit is derived from multiple TRS positioned apart at different angles with strikers at each screen. The ball is passed between the strikers and any of them can kick or hit at goal at a time of their choosing. The goal keeper sees the ball moving from screen to screen and must continually adjust to defend a shot from any of the separately positioned screens at any time.

The ceiling mounted TRS is particularly adaptable for multiple screen use for stadium sports such as Netball and Basketball as it allows a larger screen area for 360-degree training and removes the obstacle of the uprights. This arrangement is also ideal for pre-game warm up exercises for all codes of football.

The variety of drills created by multiple TRS is not just about increasing the number of training drills but also about complexities of drills that can further test the participants by challenging them to perform at their best.

The number of drills available when using multiple TRS is only limited by the imagination of the coaching staff and the players.