RIGHT PEOPLE, RIGHT ROLES

Predicting Success in Competitive Athletics
The Success Profiles "R" Factor

Increase Your Odds
of Success with
Leadership Alignment

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The Success Profiles "R" Factor for Competitive Athletics

The Success Profiles "R" factor (R for results) applies to sports as well as to business. The "R" factor is based upon three specific attributes that most contribute to a person's success.

1. T = Talent: The unique demonstrated ability, physical or mental endowments and/or natural aptitude.
2. D = Drive: The work ethic, extraordinary discretionary effort and/or competitive determination to achieve a goal or standard.
3. P = Practice discipline: The mental discipline, structure, visualization skills, prioritization, focus on goals , consistency and doing the right things - right.

Defining success and performance attributes in sports:
As first outlined by Dr. Robert Arnot and Charles Gaines in their 1984 book *Sports Selection,* there are several sophisticated factors that can determine and predict whether a person is well-suited for success in a particular sport. A person's likelihood or odds of success of reaching the Elite level in competitive athletics may be enhanced or rate-limited by specific physical, physiological, mental discipline, and emotional factors.

It's been demonstrated that when differentiated at the elite level, 70% of our athletic potential is most likely determined at birth. Maybe it's best described that great athletes are born first – then made better.

The most accomplished athletes in the world are clearly the product of both good genes and the multiplier effect of intense effort (**D**rive) and structured training (**P**ractice discipline). The facts reveal that a person with average **T**alent who has great dedication, motivation, and excellent training and coaching will not rise to the Elite level unless they first inherited a supercharged physiological system for their sport of choice.

Throughout a person's life, some of these physical attributes can be developed, some cannot. Some are easy to observe: height, size, body type. Some are difficult to readily observe but are easy to differentiate or measure: speed, power, flexibility, endurance, recovery time. Some are not easy to see or measure but their presence or impact can dramatically affect performance: vision, kinesthetic awareness, confidence, anxiety, drive, competitiveness, teamwork. Finally, some of these attributes can be improved and perfected to some degree with years of practice, discipline, skill enhancement, and pure effort.

For example, not only is VO2 Max (maximum oxygen consumption – aerobic efficiency) an absolute limiter in endurance sports; there is also a structural upper limit to it that is 100% genetic: an untrained adolescent or adult beginning aerobic training may expect an improvement of up to **30 percent** over his or her untrained VO2 max, but probably no more.

The concept of Right People, Right Roles is not to debate whether or not the demonstrated abilities of successful athletes or accomplished leaders in the workplace are inherited at birth or significantly developed over time. It is to point out that as people reach the adult level (age 21 to 30 years old), if these "Success Profile" attributes haven't been demonstrated to a high degree, it is unlikely that they will emerge or be consistently demonstrated later in life. It's not that people can't demonstrate these abilities, it's just that they are highly unlikely to if they have not previously demonstrated the talent, behaviors, or skills consistently.

While it is relatively easy to understand and accept how most physical attributes can be "rate limiting" as people age, it is very difficult for people to accept that their Drive and their Practice discipline are also rate limiting. Can't anyone, at any time, just flip the switch on and become intensely motivated to achieve and be willing to put in the extra **50% - 75%** effort to accomplish a goal? Can't everyone just wake up tomorrow and be highly disciplined to eat correctly, set ambitious goals, plan, and study intently? **It appears not.**

It is difficult to be accurate with estimates on which specific Drive and Practice discipline attributes or behaviors are most rate limiting, but it's safe to assume that changes aren't likely to be maintained if the change standard is one of consistency. By consistency, I mean whether the person's new behavior and habit persist over time so that it becomes the way a person is most of the time. Also, does the severity or risk associated with an unhealthy or ineffective behavior significantly change the odds of change or the long term success rate of change?

"If you look at coronary-artery bypass grafting patients two years later, 90% of them have not changed their lifestyle – even at the risk of dying."

Dr. Edward Miller
Dean of the Johns Hopkins Medical School and CEO

In a Fast Company article in May 2005, "Change or die," Miller noted, "Even though people know they have a very bad disease and they know they should change their lifestyle, for whatever reason, they can't." Why is it so difficult and unlikely for people to create new, healthier habits to override their auto-pilot behaviors? It's been shown in many studies that when it comes to rewiring behaviors, a person may have to allow as much time for the new "muscle memory" to take hold as it took to develop the original behavior to begin with. If it's not the same amount of time, it surely is significant and must be combined with an emotional component rather than logic. When it comes to change, fear and facts are not as powerful as emotion and engagement.

"People don't change because they are told that they should, people only change when they themselves feel that they must."

Thomas L. Friedman

According to John Kotter, a Harvard Business School Professor who has studied hundreds of organizations navigating change efforts, “Changing behavior of people isn’t just the biggest challenge in healthcare. It’s the most important challenge for businesses trying to compete. The central issue is never strategy, structure, culture or systems. The core of the matter is always about changing the behavior of people.”

Most people buy into the conventional wisdom that fear or crisis is a sufficient motivator for change. Aren’t the “finances” and “business case” for change enough to get people on board? According to Kotter, “Behavior change happens mostly by speaking to people’s feelings.” The emotion for change appears to override the facts or numbers. This is why employee engagement and ownership thinking is a requirement for real change and improvement to occur.

Given the complexity of human behaviors and the variables involved with emotions, it is unclear at this point what the precise odds are for people to change the way they have become hardwired. The research points to one or two in ten. As Marcus Buckingham says in his book, “Go with your strengths.”

“As people grow older, they tend to become more of who they already are rather than someone they are not.”

With the odds so stacked against people performing at a level they’ve never consistently demonstrated, wouldn’t a better strategy for change be for leaders to prioritize and focus on getting the Right People in the Right Roles rather than trying to fix people**?**

Alignment and Appointment Practices: Prioritize - Who first

Consider this: If the attributes or requirements of success in any endeavor, profession, or role can be specifically defined and even quantified, a selection and appointment process to differentiate people and ultimately get the right people in the right roles, where they are ideally suited, should lead to higher odds of success and greater overall performance.

Sounds too logical, doesn't it? Sounds too simple – right?

Then if the logic of “Success Profile” attributes is this basic, understood, and agreed upon, why don't we act on the principles more consistently? Maybe we never knew how to quantify the attributes or rate limiting factors. Maybe we never appreciated that the leadership attributes were more important than experience, tenure, or technical skills. Maybe we never knew how to quantify a person’s relative odds of success. Maybe we never had a simplified, structured approach to follow as a guide to make better appointment decisions. Maybe we let our personal bias and prejudices get in the way of making the

right decisions. In real estate, we understand the term "highest and best use." It seems as though we could apply this principle to sports and to people in the workforce as well.

The lessons, evidence, and guidelines featured in **Right People, Right Roles** provides the overall structured approach to increase an organization's odd of success and relative performance, one leader at a time, one department at a time.

People are not successful by accident (unless they are somehow lucky or win the lottery). There are common denominators of success amongst athletes, business people, leaders, and professionals in every field.

The Success Profiles Results Performance Equation

Let's begin to dissect the contributing factors. Follow this logic.

- Do the people with the most natural and/or developed athletic talents always win? NO.
- Do they tend to win more often? YES.
- Are the academically smartest people the most successful? NO.
- Do they tend to be more successful? YES.
- Do people with fewer natural or developed talents occasionally outperform those with more ability? YES.
- Do they tend to outperform them often? NO.
- How much does natural and/or developed talent contribute to overall results (in sports or in the workplace)? 10%, 25%, 33%, 50%, 66%, 80%??? We don't know. It may be too complex to be empirically accurate, but we can be directionally correct with an assumption. At the high school sports level it may be as low as 25%. At the elite competitive level, it can be a rate-limiting 80%. At this level, no natural athletic gifts or talent = not competitive.
- Could there be other contributing factors besides Talent that are equally important to creating consistent overall performance? YES.
- Is it possible that at specific levels or performance, these other factors can be more important to overall performance (R) that natural gifts or talent? YES.
- Is it possible that these other factors can have a multiplier effect to amplify overall performance or (R)? We believe so.
- Are there some natural or developed talents that could be considered rate limiting or a minimum requirement for consistent performance at any given level? YES for sports (think strength, power, and speed for a sprinter, VO2 max and lactate threshold level with endurance for a distance runner, flexibility and balance for a gymnast). YES for business (think general aptitude (IQ), people skills (EQ), communication skills, and problem solving ability for leaders and managers).
- Has a competitive runner with a VO2 max under 70 ever run under 4:00 minutes for the mile? NO. Is it likely they will be competitive at the Elite level? NO.

Is there a way we can more easily quantify or estimate a person's relative level of performance, in sports or in the workplace, and their predictable odds of success based upon a common number of variables? YES.

In fact, it appears that we can do so fairly accurately for athletes because of accepted standards of competitive performance and the science of exercise physiology. But what about applying the same principles in the workplace, with people in different professions or roles? Can we actually identify, measure, and compare a person's demonstrated leadership ability?

The answer is yes. The simplest way I have developed involves the individual consideration of several factors and the amplification in overall performance that can occur with different combinations of factor levels.

Finding your Personal Success Profile: A directionally-correct guide to determine your approximate level of success based upon three factors

Success Profile (R) = T (D + P) with C, O and E

R = Results: Measurable outcomes and/or comparable performance to an established standard.
T = Talent : Unique demonstrated ability, physical or mental endowments and/or natural aptitude.
D = Drive: Work ethic, extraordinary discretionary effort and/or competitive determination to achieve a goal or standard.
P = Practice discipline: Mental discipline, structure, visualization skills, prioritization, focus on goals , consistency and doing the right things - right.
C = Coachability: The professional respect and etiquette of others and a willingness to listen to all people in a position to assist and provide feedback.
O = Opportunity: The access to available tools, expertise, resources, equipment and facilities to advance to a high level.
E = Encouragement: The enriching culture of the organization/environment and positive feedback (praise) provided through instruction and coaching.

General descriptions for each Success Profile level:

Level I (RED Bottom Quartile) Example: $R^{-2} = T^{-1}(D^{-1} + P^{-1})$

- Description: No **T**alent, no **D**rive, and no **P**ractice discipline results in bottom quartile performance.

Level II (ORANGE Lower Mid Quartile) Example: $R^{-1} = T\ (D + P)^{-1}$

- Description: Average **T**alent, below-average **D**rive, and below-average **P**ractice discipline results in lower-middle quartile performance (16^{th} to the 30^{th} percentile relative performance).

Level III (YELLOW Average 50^{th} Percentile) Example: R = T **(D + P)**

- Description: Average **T**alent, average **D**rive, and average **P**ractice discipline results in Average performance (approximately the 31st to 69th percentile relative performance).

Level IV (**B- Lt. GREEN - Good**) Example: $R^2 = T^2 (D + P)$

- Description: Above-average **T**alent, average **D**rive, and average **P**ractice discipline results in upper-middle quartile performance (70th to the 84th percentile relative performance).

Level V (**B+ GREEN –Very Good**) Example: $R^4 = T^2 (D + P)^2$

- Description: Above-average **T**alent with above-average **D**rive or above-average **P**ractice discipline results in top quartile performance (85th to the 88th percentile relative performance).

Level V (**A - GREEN Very Good**) Example: $R^5 = T^3 (D + P)$

- Description: High **T**alent, Average **D**rive and Average **P**ractice discipline results in top quartile performance (89th to 91st percentile relative performance).

Level V (**A - GREEN Very Good**) Example: $R^6 = T^2 (D + P)^3$

- Description: Above average **T**alent with High **D**rive or High **P**ractice discipline results in top decile performance (89th to 91st percentile relative performance).

Level VI (**AA DARK GREEN Exceptional**) Example: $R^8 = T^2 (D^3 + P^3)$

- Description: Above average **T**alent, High **D**rive, and High **P**ractice discipline results in national-level performance (96th to the 97th percentile relative performance).

Level VI (**AAA DARK GREEN Extraordinary**) Example: $R^{10} = T^4 (D^4+P^4)$

- Description: Extraordinary **T**alent, Intense **D**rive, and Uncompromising **P**ractice discipline results in elite-level performance (99th + percentile relative performance).

Relative *"Success Profile"* Levels (Zones) Considering Multiple Factors

Success Profile **R** - Code	Formula	**T**alent Level	**D**rive Level	**P**ractice Discipline	Expected performance level	Athletic Competition Level	Simple Grade Range	Workplace Performance Level
R^{10}	$T^4 (D^4 + P^4)$	Extraordinary	Intense	Uncompromising	99th percentile	Elite Level	AAA	Extraordinary
R^9	$T^3 (D^3 + P^3)$	High	High	High	97th to 98th percentile	National Level - NCAA Division I	AA	Exceptional
R^8	$T^2 (D^3 + P^3)$	Above average	High	High	96th to 97th percentile		AA	
R^7	$T^3 (D + P)^3$	High	High but not in both		92nd to 95th percentile		A	
R^6	$T^2 (D + P)^3$	Above average	High but not in both		89th to 91st percentile + Two Std. dev.	College - Div I	A-	Very good
R^5	$T^2 (D^2 + P^2)$	Above average	Above average	Above average		NCAA - Div II or I		
	$T^3 (D + P)$	High	Average	Average		NCAA - Div II		
R^4	$T (D^2 + P^2)$	Average	Above average	Above average	85th to 88th percentile + Two Std. dev.	NCAA - Div III	B+	
	$T^2 (D + P)^2$	Above average	Above average			Jr. College		
R^3	$T^3 (D + P)^{-1}$	High	Below average			Jr. College		
R^2	$T (D + P)^2$	Average	Above average		70th to 84th percentile + One Std. dev.	HS or Local	B	Good performance
	$T^2 (D + P)$	Above average	Average	Average			B-	
R	$T (D + P)$	Average	Average	Average	Average 31st to 69th % tile	Healthy Recreational	C	Average performance
R^{-1}	$T (D + P)^{-1}$	Average	Below average		16th to 30th percentile - One Std. dev.	Unfit	D	Below average
	$T^{-}(D + P)$	Below average	Average	Average				
R^{-2}	$T^{-1}(D^{-1} + P^{-1})$	None	None	None	Bottom 15% - Two Std. dev.	Unhealthy & Unfit	F	Failing

Tony Dungy said, "Hard work beats talent every time." Not quite. I believe that this quote only really applies to people within a specific Success Profiles performance zone. At every defined level, hard work (Drive) and dedication (Practice discipline) will hit a rate-limiting level with respect to results achieved.

The short form RPR^2 assessment for Talent, Drive, and Practice Discipline Levels for Athletes

This test involves making one choice for each of the three Success Profiles factors of **T**alent, **D**rive and **P**ractice discipline. The assessment is designed to be a short-form self-evaluation that considers all the sub-factor criteria as a whole for an overall grade or score. There is a long version of the assessment that allows people to assess all 20 criteria for a much more comprehensive evaluation of each factor.

Category 1.0: Talent Factors for recreational and competitive athletes

The science and research behind *Sport Specificity* analyzes what attributes contribute an advantage for certain competitive sports. Some people are born uniquely gifted with unusual physical attributes that assist them or create an advantage for certain sports or activities. Some are very obvious, like being tall for basketball, being larger for football or smaller for being a jockey, flexibility for dancing, longer arms for swimming or volleyball, speed, strength, and quickness for explosive sports, and vision, balance, or kinesthetic awareness. The absence of these physical attributes can create obvious disadvantages in certain activities and can be considered "rate limiting" for overall performance.

Self assessment: Choose the one level that best describes your Talent level

TS 1	Your natural attributes that may contribute to your success in a particular sport.
TS 1.0	**Natural athletic abilities**
T -1 None	1. I have ***no real*** natural athletic or physical ability to better perform in any sport. It seems as though everyone is naturally better at sports than me. I'm at a physical disadvantage to participate in the activities and sports that I like.
T - Below average	2. I have ***very little*** natural athletic or physical ability to better perform in any sport. I eventually learn new skills or techniques but it seems to take me longer to learn them compared to others. I consider myself to be below average with my natural gifts or abilities (height, size, quickness, endurance, strength, balance, flexibility, etc.). As an athlete I have never been naturally good in sports but I like to participate.
T Average	3. I have ***some*** natural athletic or physical ability to better perform in any sport. As an athlete, I'm about average with my natural physical abilities (height, size, quickness, endurance, strength, balance, flexibility, etc.) compared to others I participate with or compete against. There are a few

things that physically help me in the activities/sports I have participated in. As an athlete I have been about average compared to others I participate with.

T^2 Above average	4. I have an ***above average*** amount of natural athletic or physical ability to better perform in my sport of choice. I'm able to pick up new skills and techniques more easily than most people. I have several physical attributes (height, size, quickness, endurance, strength, balance, flexibility, etc.) that allow me to perform well compared to others. I consider myself to be above average as an athlete and I participated in competitive sports in high school and beyond.
T^3 High	5. I have ***a high*** amount of natural athletic or physical ability to better perform in my sport of choice. I'm able to pick up new skills and techniques much more easily than most of the people that I know and compete against. I consider myself to be a high-caliber athlete with some unique physical gifts (height, size, quickness, endurance, strength, balance, flexibility, etc.) that allow me to perform better than most of the people I compete against. I participated in competitive sports in college and beyond.
T^4 Extra-ordinary	6. I have ***an extraordinary*** amount of natural athletic or physical ability to better perform in my sport of choice. I'm able to pick up new skills and techniques easily compared to everyone I know and compete against. I consider myself to be an exceptional athlete with many physical gifts or abilities (height, size, quickness, endurance, strength, balance, flexibility, etc.) that allow me to perform at the Elite competitive level. I participated in competitive sports at the national collegiate level and beyond.

Category 2.0: Drive Factors for Recreational and Competitive Athletes

In addition to the performance factor of raw, natural talent, motivation, work ethic, and extraordinary discretionary effort obviously contribute to consistent overall performance. Whether it is during an individual effort on a specific play, a team effort to assists, or sustained training intensity over a long period of time, the motivation to endure discomfort over time takes extraordinary will and perseverance. In the back of everyone's mind, there must be an understanding and appreciation for pure competitiveness and delayed gratification, where the benefits that will result later as a result of the additional time put in are worth far more then the temporary discomfort of the experience. Three great quotes that sum up the Drive factor mantra are:

"Pain is only a sign of weakness leaving the body."

"That, that doesn't kill you, makes you stronger."

"We're told that talent creates its own opportunities, but sometimes intense desire not only creates its own opportunities but its talents, too."

What contributes to, or is at the root of motivation to drive people to an intense level of determination? I'm not a behavioral psychologist but it could be that there is something to prove or to achieve. It could be to prove something to oneself, to others; or it could be to achieve a goal or to make a difference. Whatever it is, it's obvious that a positive attitude, optimism, and self-motivation are necessary ingredients to achieve an ambitious goal.

Choose the one level that best describes your Drive Factor level

DS 2	**Evaluate your degree of demonstrated Drive and commitment**
DS 2.0	**Drive and commitment**
D -1 None	1. I have ***no real*** drive, commitment and motivation to exercise, train, or practice. I hate the physical discomfort associated the hard exercise. I'm not naturally competitive, and I never have honestly trained to a rate of complete muscle fatigue or failure. I have a hard time getting motivated.
D - Below average	2. I have ***very little*** drive, commitment and motivation to exercise, train, or practice. I really don't like the physical discomfort associated with hard exercise. I know what it feels like but I rarely ever train to a point of discomfort or muscle fatigue. I need external motivation (or other people) to help me get into the gym for exercise, which I do occasionally when I have time. I most often demonstrate a below-average level of motivation and/or commitment.
D Average	3. I have ***some*** drive, commitment and motivation to exercise, train, or practice. I don't mind the physical discomfort associated with hard exercise. I occasionally train to a point of pain or muscle fatigue. I 'm somewhat motivated to get into the gym for exercise, which I do on a regular basis 3 or so times per week. I typically demonstrate an average level of commitment compared to others I participate with or compete against.
D^2 Above average	4. I have an ***above average*** drive, commitment and motivation to exercise, train, or practice. I actually like the challenge, reward, and gratification associated with working harder than others. I frequently train to a point of pain or muscle fatigue. I 'm self-motivated to get into the gym for exercise,

which I do on a regular basis 4 to 5 times per week. I typically demonstrate an above-average level of commitment compared to others I participate with or compete against.

D^3 High	5. I have ***a high*** amount of drive, commitment and motivation to exercise, train, and practice. I really like the challenge, reward, and gratification associated with working harder than everyone I train with. I routinely train to a high degree of pain or muscle fatigue. I 'm very self-motivated to exercise/train, which I do on a regular basis 6 or more times per week. I typically demonstrate a high level of commitment compared to others I train with or compete against.
D^4 Extra-ordinary	6. I have ***an extraordinary*** amount of drive, commitment and motivation to exercise, train, and practice. I really love the challenge, reward, and gratification associated with working harder than everyone I train with and compete against. I consistently train to a high degree of pain or muscle fatigue (often to a point of failure during intense intervals). I 'm very self-motivated to train and to get into the gym for additional weight training. I train to some degree every day and often for up to 20 or more hours per week. I typically demonstrate the highest level of commitment compared to others I train with or compete against.

Category 3.0: Practice discipline factors for recreational and competitive athletes:

In addition to the performance factor of raw, natural **T**alent and **D**rive, **Practice discipline** is a significant multiplier to increase performance. Practice discipline involves mental focus of "Perfect Practice." The concept means that if someone just practices, going through the motions with what is easy to them, convenient or fun, that the areas they need to work on to get to the next level are neglected. A runner who just puts in the miles without the structure of intense intervals will not reach their potential. The athlete who just goes to the gym to lift weights without the structure of sets and reps and doing what is uncomfortable will not maximize their potential strength gains. The diver who only performs their easy dives in practice will not be consistent in competition.

With nutrition, just eating healthily is not enough for the elite athlete. The science of nutrition involves sacrifice and discipline to eat exactly the right combination of foods at the best time to fuel the body. Athletes who demonstrate this discipline with their eating habits see food as rocket fuel to burn rather than a comfort meal to enjoy. They sacrifice the comforts and rewards of desserts, alcohol, and second helpings to be meticulous about their weight and the impact that nutrients (protein, carbohydrates, and fats) can have on performance.

With goal setting, it is not enough to have a goal or dream. The goals and objectives need to be **SMART**: Specific, Measurable, Actionable, Realistic, and Timely. The goal setting must be consistent and ongoing, a meticulous habit with measurement and hard target milestones to create urgency.

With the mental component, athletes must practice visualization and formal benchmarking by becoming a "student of their sport." This means that they study other successful athletes and learn about the science of their sport through training or game films and biomechanical analysis. This will give them a competitive advantage during both training and competition. A cyclist needs to know everything about the mechanics of their machine. A quarterback must know the defensive schemes he will encounter. A runner must know the track conditions in order to select the best shoes to wear.

Practice doesn't make perfect, perfect practice makes perfect."

The average athlete practices to "get it right,"
the best practice so that they never get it wrong.

Choose the one level that best describes your Practice discipline

PS 2	**Evaluate your degree of demonstrated Practice discipline**
P -1 None	1. I have ***no real*** practice discipline and organizational structure to routinely set measurable goals, stay on a long-term game plan, or study other athletes. The details seem to bore me, I like the flexibility that goes with not having a lot of structure, and I would rather keep things in my head than to write them down. I really like food and I feel entitled to eat anything I want when I want. I'm not naturally organized, disciplined, or goal-oriented.
P - Below average	2. I have ***very little*** practice discipline and organizational structure to routinely set goals, stay on a long-term game plan or study other athletes. I make a to-do list with things that I want to accomplish but there are no real hard measures or timelines. I really like food and eat healthily some of the time, but just can't lose the extra weight I have gained. I would say that I'm below-average on organizational structure compared to others.
P Average	3. I have ***some*** practice discipline and organizational structure to routinely set measurable goals, stay on a long-term game plan, or study other athletes. I set some measurable goals and make a to-do list with things that I want to accomplish on a regular basis. I eat healthily some of the time and understand the importance of proper nutrition. I would say that I'm about average on organizational structure compared to others.

P^2 Above average	4. I demonstrate an ***above average*** level of practice discipline and organizational structure to routinely set measurable goals, stay on a long-term game plan, and study other athletes. I set measurable short- and long-term goals and make a to-do list with things that I want to accomplish on a regular basis. I eat healthily almost all of the time and understand the importance of proper nutrition. I would say that I'm above-average on discipline and organizational structure compared to others.
P^3 High	5. I demonstrate ***a high*** level of practice discipline and organizational structure to always set measurable goals, stay on a long-term game plan, and study other athletes. I set measurable short- and long-term goals and make goal sheets to review the things that I want to accomplish on a regular basis. I eat healthily almost all of the time and understand the science of nutrition. I would say that I represent a high level of practice discipline and organizational structure compared to others I train with or compete against.
P^4 Extra-ordinary	6. I demonstrate ***an extraordinary*** level of practice discipline and organizational structure to always set measurable goals, stay on a long-term game plan, and study other athletes. I set daily, weekly, and monthly training goals and keep a log of all my daily training and nutrition. Food is not as important to me as getting the ideal nutrition required to get through my demanding training schedule. I typically demonstrate the highest level of practice discipline, organizational structure, and commitment compared to others I train with or compete against.

Example of determining you performance level or Success zone:
Please total your scores from each of the three categories to determine you ***Success Profile*** Results level (R) of overall performance. For me the following categories represent the best description of my natural **T**alent, **D**rive factor, and level of **P**ractice discipline.

Tom Olivo: $R^8 = T^2 (D^3 + P^3)$

T^2 Above average	4. I have an ***above average*** amount of natural athletic or physical ability to better perform in my sport of choice. I'm able to pick up new skills and techniques more easily than most people. I have several physical attributes (height, size, quickness, endurance, strength, balance, flexibility, etc.) that allow me to perform well compared to others. I consider myself to be above average as an athlete and I participated in competitive sports in college and beyond.

D^3 High

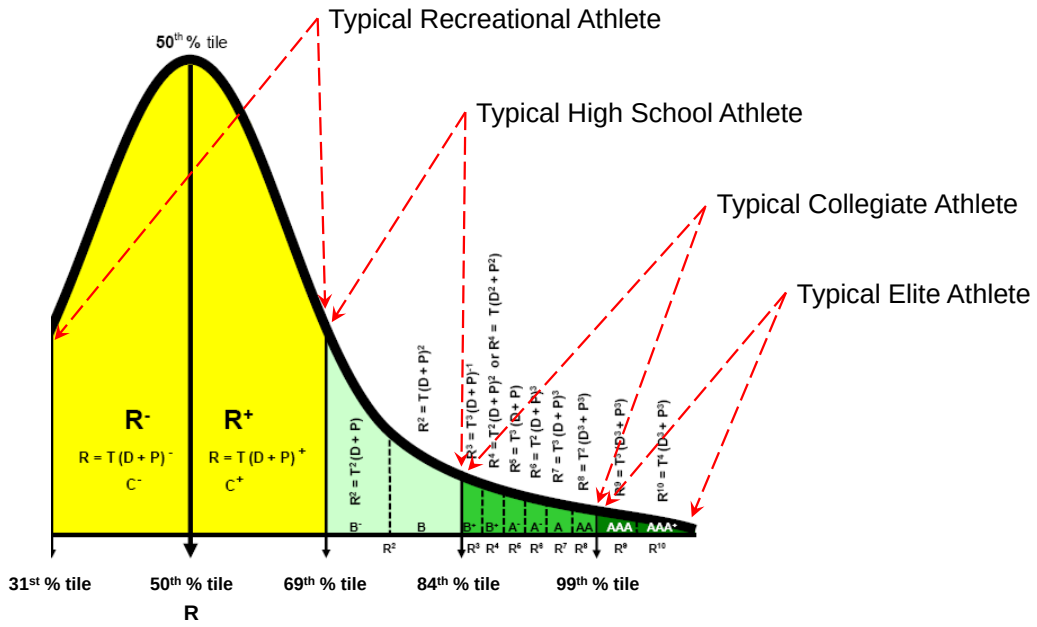
5. I have ***a high*** amount of drive, commitment and motivation to exercise, train, and practice. I really like the challenge, reward, and gratification associated with working harder than everyone I train with. I routinely train to a high degree of pain or muscle fatigue. I 'm very self-motivated to exercise/train, which I do on a regular basis 6 or more times per week. I typically demonstrate a high level of commitment compared to others I train with or compete against.

P^3 High

5. I demonstrate ***a high*** level of practice discipline and organizational structure to always set measurable goals, stay on a long-term game plan, and study other athletes. I set measurable short- and long-term goals and make goal sheets to review the things that I want to accomplish on a regular basis. I eat healthily almost all of the time and understand the science of nutrition. I would say that I represent a high level of practice discipline and organizational structure compared to others I train with or compete against.

My Results or performance level as a competitive diver was an **R^8**. I was a two-time NCAA Division III All-American in one- and three-meter diving, competitive at the NCAA Division I Level, and a two-time Masters national champion in the platform for my age group. At age 51, I continue to participate in serious recreational athletics, I consistently train an average of 9 hours per week (Drive), and have the Practice discipline to keep a log of my training on a weekly, monthly, and annual basis.

The Typical Athletic Performance Level with "R" factor



The Long form version of the "R" factor assessment for athletes is shown below.
Athletic version of assessment: 20 items 100 points maximum

Talent Factors (for competitive/recreational athletes)

Evaluate your degree of unique demonstrated Talent/ability
Sports
Physical attributes that are uniquely designed for your sport

1	Natural attributes of height, size or body type (length of limbs etc.)
2	Natural coordination or motor skills to perform technique
3	Natural endurance (Aerobic capacity - conditioning level (VO2 or lactate threshold level)
4	Natural Quickness or pure speed
5	Natural Flexibility and differential relaxation/grace
6	Natural Strength - power
7	Natural Awareness (Vision, balance or kinesthetic awareness)
35	Maximum points

Drive Factors (for competitive/recreational athletes)

Evaluate your degree of demonstrated Drive and commitment
Sports
Overall effort or commitment level

1	Work Ethic (dedicated training time compared to your peers)
2	Competitiveness or will to win (individual and teamwork)
3	Positive Attitude, optimism and positive self expectancy
4	Recovery (rest) and letting the body repair itself
5	Delayed gratification and sacrifices to achieve goals
6	Perseverance to overcome adversity, injuries and "set backs"
30	Maximum points

Practice Factors (for competitive/recreational athletes)

Evaluate your degree of Practice discipline
Sports
Mental discipline, prioritization and focus on doing the right things right)

1	Visualization "brain training" (mental rehearsal to practice ahead of time)
2	Goal setting, time management ability and habits (constructively dissatisfied)
3	The science of nutrition (disciplined eating habits)
4	Perfect Practice (prioritization and doing the right things first)
5	Benchmarking (becoming a student of the sport)
6	Consistency (average people strive to do it right - the best strive to never do it wrong)
7	Ability to handle pressure (self control and managing performance anxiety)
35	Maximum points

Maximum total score = 100 points

At every "next level" of performance, the absence or deficiency of a specific **T**alent, **D**rive factor, or **P**ractice factor can ultimately become rate limiting to competing successfully at that level.

For example: For an athlete, can a lack of physical attributes (height, size, or body type) prevent someone from successfully performing at the next level of competition? YES. However, **D**rive and **P**ractice discipline can make up for the relative talent deficiency to a certain extent. At some point, the higher level of competition will require that the higher **T**alent level is also present, providing that the competition is at the same level of **D**rive and **P**ractice discipline.

How about size in football where the average offensive lineman in NCAA competition is over 6'4" and 280 lbs? Facts for the sport of football:

- About 5.7 percent, or approximately **one in 17**, of all high school senior boys playing interscholastic football will go on to play football at a NCAA member institution.
- About 1.8 percent, or approximately **one in 50**, of NCAA senior football players will get drafted by a National Football League (NFL) team.
- Approximately **eight in 10,000**, or approximately 0.08 percent of high school senior boys playing interscholastic football will eventually be drafted by an NFL team.

Martin Chase is a retired NFL lineman who now owns www.mcsportsfan.com, a popular NFL merchandise website. Here is his feedback[1] on what it takes to be successful at that level; note the rate-limiting factors.

"First of all, to be an NFL lineman, you must have **heart and passion** [**D**rive factor] as this is the most important part of being a NFL lineman. Heart and passion for the game and winning is more important than size and strength. Good looks will not help you be successful at this level.

"The average lineman is **6'0" to 6'8"** tall and weighs **290 to 350 lbs** and all NFL lineman fall into this range [**T**alent factor]. If you are **5'8" and 165 lbs**, being an NFL lineman is not in your genes or your future. I have always felt that linemen are football's blue collar workers. We perform the hard dirty work that must be done for the team to be successful but we almost never receive any glory [**P**ractice factor]. While quarterbacks and wide receivers get all the attention, we do all the hard hitting and our bodies take the most physical stress and damage."

[1] http://EzineArticles.com/?expert=Martin_Chase

“To be an NFL lineman, you absolutely must work on your strength in the gym [**D**rive and **P**ractice factors]. While you are in high school and college, it is essential that you work continuously with strength coaches. There are three cores areas of the body that you must work on. These are your upper body, your midsection and your lower body. You should work very hard on these three core areas if you want to make it to the NFL. You also must work harder than everybody else [**D**rive factor]. Getting into the NFL is extremely competitive. To make it to the NFL, you must work harder than everyone else. While natural talent is helpful, I have found that the players who make it to the NFL are almost always the players who work the hardest on and off the field to be the absolute best at their position [**D**rive and **P**ractice discipline factors].

Here are the field techniques [Practice Factors] you must master to be a successful lineman:

1. Work on and perfect your stance. You need to have a stance that gives you the most power and gives you the most speed at the point of attack.
2. Work on the speed of your take-off. Take-off speed for a lineman is extremely important because it is almost always the lineman that strikes first that has the advantage.
3. Work on staying low to the ground in your stance and take-off because the lower you are the more power and leverage you will generate. Also, when your center of gravity is low, it makes it easier for you to keep your balance and not be knocked over. Remember, the lowest player always wins.
4. Hand placement is extremely important and you should always focus on getting your hands on the breast plate of your opponent as this gives you more control and power over your opponent. You will find that the best linemen are the ones that have the best hand placement on their opponent.
5. You must work on your first step as a lineman. Your first step should always be only 6 inches because if your first step is too long, the advantage goes to your opponent and you don't want that. So remember, keep the first step of your take-off short.
6. Learn to finish every play and never give up on a play until you hear the whistle blow. The best NFL players NEVER stop playing until the whistle blows [**D**rive Factor].

“And remember, it does not matter if you play defense or offense, linemen are all a part of the same family. Work hard and I hope to see you playing in the NFL.”

Competitive Running:
Endurance sports like running have many components that can ultimately contribute to an athlete's ability to compete at the next level of competition. In addition to raw **T**alent combined with **D**rive and **P**ractice discipline, consider the following physical, mental, and emotional attributes that can become either rate-limiting factors or competitive advantages at each level of competition.

- VO2 Max
- Lactate threshold level
- Training levels (distance, intervals, periodization training etc.)
- Running technique, mechanical efficiency
- Rest and recovery intervals
- Nutrition
- Mental toughness, high pain threshold
- Intense psychological desire to win
- Strategy and flexibility in game plan
- Performance anxiety or psychological issues
- Over- or underconfidence

The higher an athlete advances to the next level of competition, the more higher performance attributes are required to be successful. Any lack of these factors (individual or combined) can ultimately be considered rate limiting.

VO2 Max
If there were just one performance metric that may be the **best indicator of endurance**, VO2 Max (Aerobic Power& Maximal Oxygen Uptake) may be the best. It is generally considered the best indicator of cardio-respiratory endurance and aerobic fitness. However, it may be more useful as an indicator of a person's aerobic potential or upper limit than as a predictor of success in endurance events.

VO2 max has been defined as the highest rate of oxygen consumption attainable during maximal or exhaustive exercise. Genetics plays a major role in a person's VO2 max and heredity can account for up to 25% - 50% of the variance seen between individuals. The highest recorded VO2 max is 94 ml/kg/min in men and 77 ml/kg/min in women, both recorded in cross-country skiers.

The extent to which VO2 max can change with training also depends on the starting point. The fitter an individual is to begin with, the less potential there is for an increase and most elite athletes hit this peak early in their career. There also seems to be a genetic upper limit beyond which further increases in either intensity or volume have no effect on aerobic power.

A high VO2 max tells you that someone has a big engine, but to be successful, an athlete has to be able to use it.

VO2 Max as a Predictor of Performance

In elite athletes, VO2 max may not be the best predictor of performance because with the entire competitive field having a high level within a given range, several other factors may contribute to winning a race. While a high VO2 max may be a prerequisite for performance in endurance events at the highest level, other markers such as lactate threshold may be more predictive of performance.

Think of VO2 max as an athlete's aerobic potential and the lactate threshold as the marker for how much of that potential they are tapping. The upside potential with proper conditioning is approximately 30% for the VO2 max and 20% or more for Lactate-threshold (LT).

The greatest physiological performance and results (Success Profiles **R** *factor) is achieved by combining the highest natural VO2 Max and physical attributes (***Talent** *- genetic potential) with the most rigorous training (***Drive** *factor) and most effective periodization training (***Practice** *discipline).*

To be competitive at the highest levels, all elite endurance athletes, cyclists, marathoners, and cross-country skiers all have exceptional natural physiology, ideal physique, and technique. Once you get to that point, it may be the psychological factors that ultimately determine champions. How badly they want the victory, how hard they are willing to train, what amount of pain are they willing to endure every day, and what personal sacrifices are they willing to make to gain the 1% advantage make the difference. There are several athletes in every sport who seem to represent this ideal combination of the three Success Profiles factors: **Talent, Drive and Practice discipline.**

Lance Armstrong comes to mind…

It's not just that Armstrong's heart is 1/3 larger than normal or that his VO2 max and Lactate Threshold are freakish. It's that he has both the Drive and Practice discipline to multiply his talent to be at the top of the competitive cycling world. His Practice discipline is abnormal, even for elite athletes. He doesn't consume food for comfort or convenience. He eats just the right fuel (to the gram) to replenish his body and he has the discipline to eat the precise calories in the ideal proportions at the right time of day. It's uncompromising discipline for nutrition at the cellular level.

Edward F. Coyle is an exercise physiologist at the University of Texas who has studied Armstrong in his human performance lab. The result is a rare comprehensive study of an athlete over his entire career. Coyle's findings were reported in a recent issue of the Journal of Applied Physiology.

"We noted that his blood lactic acid levels were low," said Dr. Coyle, who is a cyclist himself. That is often interpreted to mean that an athlete does not tire easily. "Within five days of Bicycling magazine visiting my lab, before their article was even published, there were Web sites reporting that Mr. Armstrong had the lowest lactate levels ever recorded and that he was superhuman," he said.
But is Lance Armstrong that unusual? It depends on who you compare him with.

Mr. Armstrong, for example, can maintain a power output of about 6.8 watts per kilogram of body weight for 20 minutes. "I would say there are probably no more than 20 people on earth with that ability, and probably at least 10 of them rode or are riding in the Tour de France," Dr. Coyle said.

Mr. Armstrong's numbers may not be much different from other elite racers, but he has the average cyclist beat by a mile. A good recreational rider could generate about 4 watts per kilogram, which would translate to a speed of about 20 miles an hour on a flat road. Armstrong, Dr. Coyle said, would be traveling at 34 miles an hour.

Mr. Armstrong's VO2 max is 85 milliliters of oxygen per kilogram of body weight per minute. An average untrained person has a VO2 max of 45 and with training can get it to 60. "Lance would be 60 if he was a couch potato and never trained," Dr. Coyle said. "For the average person, their ceiling is Lance's basement."

"I'm sure there are other Lances out there who have the same potential," he added. But they may not know it because they never tried to train. "They could get on a bicycle right now," he said, "and if they were willing to suffer they could ride with the average person who's been training for two years."

Training can make a huge difference to those who are genetically gifted. Armstrong, for example, had a lactic acid test after he had recuperated from cancer and had just begun to train again. He had 8 millimoles of lactate per liter of blood, very good compared to the average person with a value of 12. But after Armstrong trained, his levels were 6, an astonishingly low number. "He has to train hard to have those very, very low levels," Dr. Coyle said.

Dr. Coyle said the difference between Armstrong and many of his competitors may be focus and training techniques. He said there were at least 10 cyclists in this year's tour who were potential challengers.

"If they followed Lance's preparation and rode on his Discovery team with the same great teamwork that Discovery has given him, and if they can muster the right mindset to believe they can really do it when it counts, they could be equally impressive," he said.

"[He] is on top of the cycling world because of the combination and interaction of his genetic endowment, years of incredible training, competitive experience, and obsessive drive to achieve and

persevere," said Phillip B. Sparling, a professor of applied physiology at the Georgia Institute of Technology in Atlanta.

Effects of Aging on VO2 Max:

VO2 max decreases with age. The average rate of decline is generally accepted to be about 1% per year or 10% per decade after the age of 25. One large cross-sectional study found the average decrease was 0.46 ml/kg/min per year in men (1.2%) and 0.54 ml/kg/min in women (1.7%).

However, master athletes who continue to keep fit only show a decrease of 5-6% per decade or 0.5-0.6% per year. When they maintain the same relative intensity of training, a decrease of only 3.6% over 25 years has been reported and most of that was attributable to a small increase in body weight.

Aside from genetic factors, three other components have a large influence on VO2 max:

- Age - Although it varies greatly by individual and training programs, in general VO2 max is the highest at age 20 and decreases nearly 30 percent by age 65.
- Gender - Many elite female athletes have higher VO2 max values than most men. But because of differences in body size and composition, blood volume and hemoglobin content, a woman's VO2 max is in general about 20 percent lower than a man's VO2 max.
- Altitude - Because there is less oxygen at higher altitude an athlete will generally have a 5 percent decrease in VO2 max results with a 5,000 feet gain in altitude.

VO2 MAX for Tom Olivo at age 30.

At the peak of my endurance training, I was able to hold approximately a 5:50 running pace for several miles. My best 10K race time was 36:50 when I was 30 years old. The best estimate for my VO2 Max is calculated using a formula developed by Jack Daniels (no, the other guy). Although this aerobic performance is above-average for an athlete, especially a diver, it is clearly not competitive at even the high-school track level. No matter how hard I trained (**D**rive factor) and no matter what coaching and structure I followed (**P**ractice Discipline), I simply lacked the talent to be a competitive runner. I was only able to multiply my talent to at most the B+ range.

Distance: 6.214 miles - 10.0 km
Best Race Time: 0:36:50
Velocity: 4.525 m/s 10.122 MPH
5:55 per mile pace

VO2 at this pace: 52.55 ml/kg/min (91.9% of max)
VO2 MAX: 57.21 ml/kg/min

The formulas[2] used are:
Percent max = 0.8 + 0.1894393 * e^(-0.012778 * t) + 0.2989558 * e^(-0.1932605 * t)
VO2 = -4.60 + 0.182258 * v + 0.000104 * v^2
VO2 MAX = VO2/percent max
Where t is the race time in minutes, and v is race velocity in meters per minute.

To estimate your VO2 Max with this calculation, There are several web sites you can visit:
And enter the performance data of: Distance: Miles Km.
Time: Hours Minutes Seconds

The Maximum Oxygen Update (Max VO2) values for selected groups and individuals are as follows:
General Population, Female, Aged 20-29: 35-43 ml/kg/min
General Population, Male, Aged 20-29: 44-51

Examples of elite athletes tested:

- Steve Prefontaine, US runner who ran the mile in 3:54.6: 84.41
- Frank Shorter, US Olympic marathon winner: 71.3
- Ingrid Kristiansen, ex-marathon World Record holder: 71.2
- Derek Clayton, Australian ex-marathon World Record holder: 69.7
- Rosa Mota, marathon runner: 67.2
- Jeff Galloway, US runner: 73.0
- Paula Ivan, Russian Olympic 1500M Record Holder: 71.0
- Jarmila Krotochvilova, Czech Olympian 400M/800M winner: 72.8
- Greg LeMond, professional cyclist: 92.5
- Matt Carpenter, Pikes Peak marathon course record holder: 92
- Miguel Indurain, professional cyclist: 88
- Carlos Lopes: 85.1
- Grete Weitz: 73.5
- Ed Whitlock, at 69 years old: 52.8
- Bjorn Daehlie, cross-country skier: 90.0
- John Ngugi, 5-time world cross-country champion: 85.0
- Dave Bedford, 10km World Record holder: 85.0
- Lance Armstrong, cyclist, repeat winner of Tour de France: 84.0
- Joan Benoit, marathon runner (2:24:52): 78.6
- Bill Rodgers, marathon runner (2:09:27): 78.5
- Sebastian Coe, middle distance runner and holder of the 1 mile world record: 77.0

[2] VO2 and percent max based on *Jack Daniels, Conditioning for Distance Running - The Scientific Aspects*, Wiley & Sons, 1978.

A Case Study

Michael Phelps is a classic example of physical attributes setting an athlete up for Elite competition. Although Phelps' VO2 max level has never been published (he may not have ever undergone the test), his ideal physical talents combined with incredible Lactate Threshold levels achieved by combining his natural talent with training are quite remarkable.

Lactic acid is produced by human body in muscle cells during exercise. Accumulation of lactic acid occurs when the supply of oxygen to the cells is limited because the muscle cells are working hard. So, indirectly, the less lactic acid one has, the better he can perform in his next race. A US researcher specializing in swimmer physiology has done some test on Michael Phelps. Even after swimming, Phelps' lactate count was 5.6 (5.6 millimoles of lactate per liter of blood). How about other swimmers? Out of 5,000 other competitive swimmers being tested, all of them had levels higher than 10. In other words, the uncommonly low number of lactate is significant in Phelps' body. His muscles recover faster than almost everyone else's after a workout or race. This has enabled him to compete in so many events within a short time while breaking records one after another. In the 2008 Beijing Olympics alone, he swam more than 25 miles and over 1,000 laps at Water Cube, including preliminary and semifinal heats.

Also consider Michael Phelps' body measurements: stands 6 feet 4 inches (193 centimeters) and weighs 195 pounds (88.5 kilograms), with the broad shoulders and slim waist common to the elite swimmer. He has an extended trunk, a tremendous reach and relatively short legs, a distinct advantage in the water. The inseam of his pants is reportedly 32 inches (81 centimeters), shorter than that of Hicham El Guerrouj, the great Moroccan runner, who is 5 feet 9 inches (175 centimeters) but all legs. He has extremely flexible elbows, knees, and ankles, and size-14 feet that act like giant fins.

To varying degree, these traits are all hereditary. As the renowned Swedish exercise physiologist Per-Olof Åstrand once said, "The most important thing an aspiring athlete can do is to choose the right parents."

MAXIMAL OXYGEN UPTAKE NORMS FOR MEN (ml/kg/min)

	18-25 years old	26-35 years old	36-45 years old	46-55 years old	56-65 years old	65+ years old
excellent	>60	>56	>51	>45	>41	>37
good	52-60	49-56	43-51	39-45	36-41	33-37
above average	47-51	43-48	39-42	35-38	32-35	29-32
average	42-46	40-42	35-38	32-35	30-31	26-28
below average	37-41	35-39	31-34	29-31	26-29	22-25
poor	30-36	30-34	26-30	25-28	22-25	20-21
very poor	<30	<30	<26	<25	<22	<20

MAXIMAL OXYGEN UPTAKE NORMS FOR WOMEN (ml/kg/min)

	18-25 years old	26-35 years old	36-45 years old	46-55 years old	56-65 years old	65+ years old
excellent	56	52	45	40	37	32
good	47-56	45-52	38-45	34-40	32-37	28-32
above average	42-46	39-44	34-37	31-33	28-31	25-27
average	38-41	35-38	31-33	28-30	25-27	22-24
below average	33-37	31-34	27-30	25-27	22-24	19-22
poor	28-32	26-30	22-26	20-24	18-21	17-18
very poor	<28	<26	<22	<20	<18	<17

Success Rates for Athletes participating is specific sports

Men's Basketball

- Less than one in 35, or approximately 3.0 percent, of high school senior boys playing interscholastic basketball will go on to play men's basketball at a NCAA member institution.
- Less than one in 75, or approximately 1.2 percent, of NCAA male senior basketball players will get drafted by a National Basketball Association (NBA) team.
- Approximately three in 10,000, or approximately 0.03 percent of high school senior boys playing interscholastic basketball will eventually be drafted by an NBA team.

Women's Basketball

- About 3.3 percent, or approximately three in 100, of high school senior girls interscholastic basketball players will go on to play women's basketball at a NCAA member institution.
- About one in 100, or approximately 1percent, of NCAA female senior basketball players will get drafted by a Women's National Basketball Association (WNBA) team.
- Approximately one in 5,000, or approximately 0.02 percent, of high school senior girls playing interscholastic basketball will eventually be drafted by a WNBA team.

Football

- About 5.7 percent, or approximately one in 17, of all high school senior boys playing interscholastic football will go on to play football at a NCAA member institution.
- About 1.8 percent, or approximately one in 50, of NCAA senior football players will get drafted by a National Football League (NFL) team.
- Approximately eight in 10,000, or approximately 0.08 percent of high school senior boys playing interscholastic football will eventually be drafted by an NFL team.

Baseball

- Approximately three in 50, or about 6.1 percent, of high school senior boys interscholastic baseball players will go on to play men's baseball at a NCAA member institution.
- Less than ten in 100, or about 9.4 percent, of NCAA senior male baseball players will get drafted by a Major League Baseball (MLB) team.
- Approximately one in 200, or approximately 0.45 percent of high school senior boys playing interscholastic baseball will eventually be drafted by an MLB team.

Men's Ice Hockey

- Approximately 11 in 100, or about 11 percent, of high school senior boys interscholastic ice hockey players will go on to play men's ice hockey at a NCAA member institution.
- Less than 1 in 27, or about 3.7 percent, of NCAA senior male ice hockey players will get drafted by a National Hockey League (NHL) team.

- Less than one in 300, or approximately 0.32 percent of high school senior boys playing interscholastic ice hockey will eventually be drafted by an NHL team.

Men's Soccer

- Less than three in 50, or about 5.5 percent, of high school senior boys interscholastic soccer players will go on to play men's soccer at a NCAA member institution.
- Less than one in 50, or about 1.7 percent, of NCAA senior male soccer players will be drafted by a Major League Soccer (MLS) team.
- Approximately one in 1,250, or approximately 0.07 percent of high school senior boys playing interscholastic soccer will eventually be drafted by an MLS team.

Methodology

To calculate the estimated probability of competing in athletics beyond the high school interscholastic level, data from several sources were combined. First, the estimated number of high school student-athletes participating interscholastically in the sports having a major professional league in the United States was obtained from the National Federation of State High School Associations. To estimate the number of high school seniors participating interscholastically in those sports, the total number of high school student-athletes participating was divided by 3.5. This figure was used because some high schools are three-year high schools while others are four-year high schools.

The estimated number of NCAA student-athletes competing in the sports with major professional leagues in the United States was obtained from the NCAA's 1982-06 Participation Statistics Report. To estimate the number of NCAA roster positions in these sports available to an incoming freshmen class, the total number of NCAA student-athletes participating was divided by 3.5. This figure was used because current player attrition will leave more roster positions open than would be expected due to normal graduation. To estimate the number of NCAA senior student-athletes participating in those sports, the total number of NCAA student-athletes participating was divided by 4.5. This figure was used because student-athletes participating in these sports often red shirt and therefore are on the team for five years. The number of college student-athletes drafted by the major professional sport leagues in the United States was calculated using the most recent draft data for each league.

To calculate the probability of a high school senior going on to participate for a NCAA institution in these sports, the estimated number of open NCAA roster positions was divided by the estimated number of high school seniors participating interscholastically in these sports. To calculate the probability of a NCAA senior student-athlete being drafted by a professional team in these sports, the number of NCAA student-athletes drafted into these professional leagues was divided by the estimated number of NCAA senior student-athletes participating in these sports. To calculate the probability of a high school senior student-athlete eventually being drafted by a professional team in these sports, the number of NCAA senior student-athletes drafted by a United States professional league in these sports was divided by the estimated number of high school seniors participating interscholastically in these sports. All probabilities were multiplied by 100 to convert them to percentages.

Student-Athletes	Men's Basketball	Women's Basketball	Football	Baseball	Men's Ice Hockey	Men's Soccer
High School Student Athletes	546,335	452,929	1,071,775	470,671	36,263	358,935
High School Senior Student Athletes	156,096	129,408	306,221	134,477	10,361	102,553
NCAA Student Athletes	16,571	15,096	61,252	28,767	3,973	19,793
NCAA Freshman Roster Positions	4,735	4,313	17,501	8,219	1,135	5,655
NCAA Senior Student Athletes	3,682	3,355	13,612	6,393	883	4,398
NCAA Student Athletes Drafted	44	32	250	600	33	76
Percent High School to NCAA	**3.0%**	**3.3%**	**5.7%**	**6.1%**	**11.0%**	**5.5%**
Percent NCAA to Professional	**1.2%**	**1.0%**	**1.8%**	**9.4%**	**3.7%**	**1.7%**
Percent High School to Professional	**0.03%**	**0.02%**	**0.08%**	**0.45%**	**0.32%**	**0.07%**

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