



# Pushing Frontiers In Space And On The Field

**Safety, integrity, teamwork and excellence. Those are words that could guide a successful football program. They also happen to be the words that guide the National Aeronautics And Space Administration (NASA). One flight operations engineer/football coach uses them for both.**

*By Paul Markgraff*

Building character and values within a football program is not rocket science. For Yusef Johnson, a decades-long member of the American Football Coaches Association (AFCA) and assistant coach for Bayside (Fla.) High School, the right foundational values are critical and form the bedrock of a great football program.

Those same foundational values are also at the core of his “day job,” which is working as a flight design engineer for a.i. solutions, Inc, supporting NASA’s Launch Services Program. While working many years within flight control for NASA’s Space Shuttle program — and in the years since — he has found that many aspects of NASA’s “Foundations of Flight Operations” were directly transferable to football coaching.

Flight Operations within NASA operates according to a specific vision, mission and set of values. Part of that code is The Foundations of Flight Operations. It contains a variety of qualities essential to establishing and maintaining professional excellence.

Football coaches would do well to instill the same qualities into themselves, their players and their programs as a whole.

## **Discipline**

Discipline is being able to follow as well as to lead, knowing that we must master ourselves before we can master our task.

“When I was a flight controller, knowing you have to master yourself, you have to keep yourself under control, is

incredibly important,” says Johnson. “Okay, things around you may be going crazy, different systems may be failing, you’re getting inquiries from different members of the flight control team. And you must maintain your cool, think clearly and quickly, and provide concise answers to whatever problem needs to be solved, in spite of everything going on around you.

“At the same time, the last two head coaches I worked for have both stressed, ‘the most important discipline is self discipline.’ If you can’t keep yourself disciplined, you’re not going to be able to make the correct decision that’s needed in a given situation. Whether it be rocket science, football or life in general.”

## **Competence**

There being no substitute for total preparation and complete dedication, for flight will not tolerate the careless or indifferent.

“Most flight controllers are over a given system,” says Johnson. “I worked on the Space Shuttle. You have people who work in the Space Station program. We’re all responsible for given systems. We’re expected to have almost total knowledge of that system. So when things go wrong, we can solve the problem quickly and concisely.

“When you compare that to football, there’s no excuse for incompetence. There’s no excuse for not knowing your assignment. There’s no excuse for not knowing where to line up, where you should be aligned, if you’ve been coached that.



Football coaches would do well to instill the philosophy of NASA Flight Operations into themselves, their players and their programs as a whole.

So as a coach, I need to be well-versed in what I'm trying to teach. On top of that, our players must put in the dedication and the preparation to learn the system. Receivers must know their routes. We all know, a lineman stepping the wrong way can get somebody hurt, and I equate that to me making a bad decision on console. Lives are at stake."

**Confidence**

Believing in ourselves as well as others, knowing that we must master fear and hesitation before we can succeed.

"In the flight control world, you achieve that through training and being in those high-stress situations, long before you've ever worked a mission," he says. "It's the same thing with football practice. We have to put our players through those high-pressure situations so that when the moment of truth comes in the real game, they don't flinch, and they have complete confidence in what they're doing."

**Responsibility**

Realizing that it cannot be shifted to others, for it belongs to each of us; we must answer for what we do or fail to do.

"I don't know that it can be said any better than that," says Johnson. "In flight control, everyone needs to know their jobs and take ownership when something goes wrong. Your colleagues will respect you for that.

"It's the same thing in football, for players and coaches. With players, if you instill within each kid a sense of owning his job, then he has to answer for what he did and didn't do. At the same time, it's our responsibility as coaches to make

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sure that our kids know what to do. You see a lot of coaches who yell and yell, but did they teach that kid what to do? Did they teach him the proper technique? I'll always yell at kids with no hustle, but at the same time, I know what my responsibility is as a coach. If my receivers don't know their routes, that's on me. That's not on them."

### Toughness

Taking a stand when we must; and to try again and again, even if it means following a more difficult path.

"In engineering, it's too easy to use the simple solution, when you'd be surprised that if you delved into a problem just a little bit more, you'd find a better solution," says Johnson.

"One of the beautiful things about football is, many times, there is no easy way out. And sometimes, especially when you're preparing, you have to take the more difficult path and you have to put more time in. You have to lift more weights and watch more film. You can't quit. You have to try and to try again and again. You can't give up."

### Teamwork

Respecting and using the abilities of others, realizing that we work toward a common goal, for success depends upon the efforts of all.

"The key here is that it depends upon the efforts of all," he says. "When I worked on the shuttle program, even now, working in launch services, there are so many pieces to this machine that must work right. We all have our jobs, too. Everybody must respect each other's job no matter how small, no matter how large. When I worked on shuttle, you had flight directors and you had the person putting together the flight plan. All that person did, literally, was stand in front of a copy machine trying to get that plan put together for folks to hand out in meetings. Everyone has a job to do, and you respect that person, and you respect those people no matter how small or how large a position is.

"It's the same thing in football. You've got people on your team who probably won't get the fame and adulation of others. Those


people are just as important to the team as the starting quarterback. Everyone's important."

### Vigilance

Being always attentive to the dangers of flight; never accepting success as a substitute for rigor in everything we do.

"It's true, especially in engineering, because unfortunately, there've been a couple of times where there wasn't enough rigor," says Johnson. "We lost two space shuttles because of it. Space flight is dangerous, and if you don't

apply rigor into everything you do, in the end it could be a bad day.

"Football is also a dangerous game. If our kids aren't taught the proper techniques and how to protect themselves on the football field, it can get someone killed. That warning is on the back of every helmet. We make our kids read it before the start of the season every year. You can get killed playing football. It extends to making sure kids are tested for sickle cell, making sure they are hydrated properly. Vigilance is about attention to detail." 

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