

Living in Space Renders Astronauts Weak as 80-Year-Olds

The Wired Word for August 29, 2010

In the News

Living and working at the International Space Station in orbit around Earth may be high adventure, but it comes at a cost, says a new study from Marquette University biologist Robert Fitts, published online in the September issue of *The Journal of Physiology*. That cost: After just six months in space, astronauts can become as weak as 80-year-olds.

Although the accelerated space aging is temporary and is reversed after a few months back on Earth, the finding raises serious health concerns for NASA as the agency contemplates long trips to Mars, asteroids and other distant places in the galaxy. A Mars trip, for example, would take at least three years.

While weakened astronauts are able to continue functioning in the weightless environment of space, they'd likely have difficulty in the event of an emergency landing on Earth that required them to hurry away from a burning spacecraft. Likewise, a spacewalk for extensive repairs on equipment after living in the gravity-free conditions for months might require more strength than the astronauts could muster.

As it is, upon return to Earth after six months away from gravity, astronauts have to undergo physical therapy and, because of balance difficulties, are not permitted to drive for up to four weeks.

The findings are based on biopsies of the calf muscles of nine U.S. and Russian space station residents from 2002 to 2005, all of whom spent six months aboard the orbiting lab. The astronauts submitted to biopsies both right before blasting off for the station and immediately upon return. The researchers found that the astronauts had each lost more than 40 percent of the power in the slow-twitch fibers of the calf muscles.

NASA has currently addressed this problem by sending a different kind of resistive exercise machine to the station, and also by urging the space station residents to eat more. Astronauts often find their appetites are poor while in orbit, in part because of the heavy workload.

More on this story can be found at these links:

[Study: Astronauts As Weak As 80-Year-Olds in Space. Yahoo! News](#)

[Prolonged Space Flight-Induced Alterations in the Structure and Function of Human Skeletal Muscle Fibres. Journal of Physiology](#)

The Team Discussion

When team member David Hall submitted the news story, he commented, "We have all seen, '7 days without God make one weak' on church signs. Apparently an extended period without gravity makes astronauts weak. We could look at the need for abiding in God [and] what absence from worship, study, prayer does to weaken our spiritual wellness."

One team member responded, "I think a lot of sincere Christians have a hard time maintaining daily devotions. I suspect it's constitutionally easier for some than others. Perhaps those who are naturally more introspective

have an easier time of it. I know that trying to maintain a daily devotional life leaves me cold. I've tried -- sometimes for as long as a couple of years at a stretch -- but it eventually becomes something I have no will to continue. And I am a lousy pray-er. I wouldn't want a lesson that is simply another time to lay a guilt trip on committed Christians who can't do daily devotions."

David then explained, "I was thinking less about daily devotions and more about *abiding*. That constant knowledge that God is my underpinning. That trusting him to be active in my daily life. That strength that comes from letting him be in control. If I do not have him 'holding me in place,' I weaken to the point that I succumb to the world and its drawing. Astronauts weaken to the point of being like 80-years-olds without gravity holding them in place. Their muscles atrophy. Without God's urging, pushing, cajoling, my spiritual strength suffers similarly. My abiding comes from prayer, daily devotions and worship. It is the Sunday morning type of worship but it is also the kind of worship we find in a Chris Rice song, 'Hallelujahs.'" [For copyright reasons, we are unable to quote the lyrics, but you can find them [here](#).]

Yet another team member said, "I would say friends and mentors who are deep in Christ have had a huge impact on me in terms of helping me stay connected with Christ, especially when I was going through deep waters."

Still another team member added, "I find the discipline of daily prayer to simply be part of what it means to be a clergy, and now, to live as a vowed Solitary. ... the Daily Office of Morning Prayer, Evening Prayer and Compline is part of our tradition ... I find the readings often sustain me through my day and generally feed me. As an introvert ... I may be more inclined to the solitary/life of prayer. [Different] personality types [are] attracted to different 'style[s]' of spirituality and prayer. So there isn't a one-style-fits-all kind of daily practice."

Another team member said, "Where does this 'daily devotional' stuff come from? Is this view a holdover from monastic traditions, Thomas a Kempis, Puritan piety? Jesus prayed and meditated, but I doubt he did it every morning at 6 a.m."

Finally, one other team member said, "I do spend a little time each morning with a devotional. Before you ... have any 'devotional guilt,' let me confess that I can't recall today's Scripture or focus [from the devotional]. Unfortunately, this can often be the case when I am distracted by 'life.' I am a creature of habit, so I have been doing this for years, but my conversations with God throughout the day are often far more memorable and meaningful than my morning dip in the Scriptures. There are days when the reading really speaks to me, but I am (by nature) an introspective sort, so that may be more natural for me than for others. ... I think the underlying premise here is the connection, not how it is made. Many people are not readers or pray-ers, so maybe the lesson can explore how those Christians connect with God in a meaningful way. At this point in my faith walk, I am encouraged by how frequently I see God at work around me, and how I am able to more easily recognize Divine intervention in the circumstances of life. Looking for God and finding him in life has more impact on me than any daily devotional ever has."

The Big Questions

1. What does it mean to "abide" in God?
2. Is some form of *daily* attention to one's spiritual life necessary to maintain spiritual health? Why or why not? Is attendance at *weekly* worship enough to keep one's faith vibrant?
3. How do personality types affect one's ability to sustain a daily devotional routine? Do introverts and organized people have an advantage over extroverts and disorganized people? If your personality type does not lend itself to "time apart" and introspection, should you try to develop the daily devotional habit anyway? Should you feel guilty if you do not succeed?

4. How does living in the "gravity" of daily life affect spiritual health? Is abiding in God affected by the state of our emotions? Explain.

5. What if you faithfully practice daily devotions but nothing appears to happen -- there is no emotional lift and no spiritual insight gained? Should you continue anyway? What is likely to be the outcome?

Confronting the News with Scripture

Here are some Bible verses to guide your discussion:

John 15:4-5

"Abide in me as I abide in you. Just as the branch cannot bear fruit by itself unless it abides in the vine, neither can you unless you abide in me. I am the vine, you are the branches. Those who abide in me and I in them bear much fruit, because apart from me you can do nothing." (For context, read 15:1-11.)

Jesus spoke these words to his disciples at the Last Supper. Using the metaphor of vine and branches, Jesus' point is that his followers can only do his will, "bear fruit" and love one another if they *stay connected* to him, the way a branch is connected to a vine.

Question: What is the most effective way you have found to stay connected to Christ?

Psalm 1:2-3

"... but their delight is in the law of the LORD, and on his law they meditate day and night. They are like trees planted by streams of water, which yield their fruit in its season, and their leaves do not wither. In all that they do, they prosper." (For context, read 1:1-6.)

The psalmist is here speaking about the righteous, who "abide" in -- draw their strength from -- God's "streams of water."

Questions: Is the psalmist saying that the righteous "delight" in *meditating* on the law of God, or simply that they delight in the law of God *itself*? What is the difference, and why is it important?

Daniel 6:10

"Although Daniel knew that the document had been signed, he continued to go to his house, which had windows in its upper room open toward Jerusalem, and to get down on his knees three times a day to pray to his God and praise him, just as he had done previously." (For context, read 6:1-23.)

This verse is part of the prelude to the well-known incident of Daniel being thrown into a lions' den but being kept safe there by God. Personal enemies had gotten the Babylonian king to issue a decree outlawing worship of anyone but him. Daniel, despite knowing the decree had been issued, continued his practice of praying three times daily to God, "just as he had done previously." In other words, this three-times-daily prayer was his habitual way of "abiding" in God.

Without question, Daniel was faithful to God, brave and disciplined, but should he be a devotional model for Christians today? As far as we know, praying three times a day was not a commandment for Jews in Daniel's time, so it appears that he was following this regimen by choice. It's also likely that he had the type of personality and the style of organization that helped him keep at it, though we don't know that for certain.

Another way of prayer is a more conversational approach, where prayer is not at specific times but ongoing throughout the events of each day. This approach to prayer is sometimes called "practicing the presence of God." That phrase comes from the title of the 17th-century devotional classic *The Practice of the Presence of God*, written by a lay-monk named Nicholas Herman but known in the monastery as Brother Lawrence. Brother Lawrence was assigned to work in the kitchen of the monastery. He sought to pay attention to God within

himself, even while going about his daily tasks. He found himself more and more able to do this and eventually found “that the time of business does not with me differ from the time of prayer, and in the noise and clatter of my kitchen, while several persons are at the same time calling for different things, I possess God in as great tranquility as if I were upon knees at the blessed sacrament.”

Questions: Is abiding in God a matter of daily set-aside time or ongoing-ness? What is the difference?

Luke 5:15-16

"But now more than ever the word about Jesus spread abroad; many crowds would gather to hear him and to be cured of their diseases. But he would withdraw to deserted places and pray." (For context, read 5:12-16.)

This is but one of several occasions where the gospels report Jesus withdrawing to pray. But this occasion is especially instructive. Verses 12-14 tell of Jesus healing a man with leprosy. This news sent the crowds thronging to Jesus, clamoring for healing as well. Note, however, what verse 15 does not say. It tells that the crowd came both to hear Jesus and to be cured of their diseases, but it does not say that Jesus stayed to heal them all. In fact, verse 16 begins with a transitional "but": "But he would withdraw to deserted places and pray."

Given the other accounts from the gospels, there is no reason to think Jesus refused to heal many who came, but, given the primitive state of medicine in that day, the stream of those coming must have been endless. At some point, Jesus chose to turn away and take time to talk with the Father, his source of strength and power.

Here are some other places where the gospels mention Jesus praying:

- Matthew 14:23 - "And after he had dismissed the crowds, he went up the mountain by himself to pray. When evening came, he was there alone ..."
- Mark 1:35 - "In the morning, while it was still very dark, he got up and went out to a deserted place, and there he prayed."
- Luke 6:12 - "Now during those days he went out to the mountain to pray; and he spent the night in prayer to God."

Questions: Why do you think Jesus made a point of going aside to pray? Why was that important for his ministry? What does his practice suggest about what practices would be helpful for us? Do you think Jesus expected his followers to pray as often as he did himself?

Acts 11:25-26

"Then Barnabas went to Tarsus to look for Saul, and when he had found him, he brought him to Antioch. So it was that for an entire year they met with the church and taught a great many people, and it was in Antioch that the disciples were first called 'Christians.'" (For context, read 11:19-26.)

Acts 11:19-26 tells of Christians scattering after the stoning of Stephen, but also of the mother church at Jerusalem sending Barnabas to witness in Antioch. Barnabas seeks out Saul and brings him to Antioch so he can see how God is moving among those scattered due to the persecution that arose in connection with Stephen's death, in which Saul had a role prior to his conversion.

Given his history, Paul (his post-conversion name) might well have become discouraged and struggling to find his "sea legs" in the larger body of Christ, had it not been for Barnabas, whose name means "son of encouragement." In Antioch, Paul learned lessons about the sovereignty of God, the cross, the power of the resurrection and forgiveness when he saw that God was able to transform not only his own heart but also the hearts of the victims of his sin of fanatical religious terrorism. The entire church at Antioch was instrumental in

helping Paul abide in Christ when they not only accepted him as a member of their band of believers, but also sat at his feet, allowing him to teach them. No doubt many of them taught Paul plenty about grace. No wonder the disciples were first called Christians in Antioch, for they behaved in a remarkably Christ-like manner when they embraced this man who had had a hand in the persecution and murder of their friends and relatives.

Question: When has church fellowship help you abide in Christ?

Romans 12:2

"Do not be conformed to this world, but be transformed by the renewing of your minds, so that you may discern what is the will of God -- what is good and acceptable and perfect." (For context, read 12:1-8.)

The words above are advice -- Christian advice -- from Paul to the Christians at Rome. He links transformation -- from the culture of the world to the culture of God's kingdom -- to the renewal of their minds.

Well, how do we renew our minds, other than by study and a concerted effort to weigh information in our minds? Whether or not this needs to be done *daily* is an open question, but clearly Paul means it needs to be done *intentionally*. In other words, abiding in God doesn't "just happen."

Question: What do you think Paul meant by mind "renewal"?

For Further Discussion

1. Prayer, worship, Christian fellowship and study are not the only means for spiritual abiding. Some others, often called "spiritual disciplines," include fasting, meditation, solitude, practicing the presence of God, receiving the Lord's Supper, doing good deeds, generosity, confession, submission, intentional poverty, chastity (including celibacy), obedience to the church, journaling, receiving spiritual direction from a spiritual director, Christian conferencing (as in class meetings) and pilgrimage. Which of these have you found spiritually helpful? Why?

2. React to this from Thomas Merton: "One cannot begin to face the real difficulties of the life of prayer and meditation unless one is first perfectly content to be a beginner and really experience himself as one who knows little or nothing, and has a desperate need to learn the bare rudiments. Those who think they 'know' from the beginning will never, in fact, come to know anything. We do not want to be beginners. But let us be convinced of the fact that we will never be anything else but beginners, all our life!"

3. Respond to this comment from a TWW team member: "Prayer has many forms from sitting in silence, looking at nature, listening to music, thinking of someone in need, reading a work of beauty or inspiration, to watching a sunrise/set in awe. It isn't so much how one prays as it is how one nurtures one's relationship with God, including taking time to be silent, attentive and open."

4. What is your reaction to the following?

Jane Vennard is a former faculty member at Iliff School of Theology in Denver, where she taught courses on prayer and spirituality. She is also the author of several books on prayer. Here's part of an interview with her that appeared in *Homiletics*:

HOMILETICS: Some say, "The problem with prayer is that it's so boring. What's so great about prayer?"

VENNARD: Well, I think you're defining prayer in a narrow way if you find prayer boring. What we read in Scripture is that prayer is in the foreground of our life or as the bedrock of our life. When I talk about prayer, I'm talking about acknowledging our ongoing relationship with God.

HOMILETICS: But you use a word that just doesn't seem to go with prayer. You call it "fun."

VENNARD: Yes, I believe that, because I understand dancing as prayer, I understand gardening as prayer (that's not always fun -- gardening!), but I understand a lot of activities that are prayer-ful as enjoyable, as fun,

as honoring God's presence. And part of my own prayer life is regular walking and hiking in God's environment. That's fun.

HOMILETICS: It is fun. But is it the gardening and the walking that is the prayer component, or is prayer something you do while you're walking and gardening?

VENNARD: No, it's not that I pray while I'm gardening, but with the intention of my gardening becoming my prayer, that my gardening honors my relationship with God, my dance honors my relationship with God. I would call the act itself prayer. It's not like I'm gardening and I'm praying all the time.

HOMILETICS: So you could have two gardeners and one of them is praying and one of them is not.

VENNARD: Yes, and it has to do with one's intention. So what is the intention of doing the kitchen work, or the writing, or the walking, or whatever it is we're doing in our lives? Is there an intention to serve God and to honor our relationship with God? There are a lot of different ways we can say that. ... And it has to do with his call to "pray without ceasing."

Responding to the News

It may be useful to talk more broadly about the spiritual disciplines. Many people think only of prayer, Bible reading and devotional reading as means of abiding in Christ, but the list, as in #1 under "For Further Discussion," is much longer. Some people may find some of these other disciplines helpful.

Closing Prayer

O God, help each one of us who follow Jesus to find the way that is best for us to stay connected to the vine that is Christ. Nourish us, we pray, from your streams of living water. In Jesus' name. Amen.

Copyright 2010 Communication Resources