

Chicken and egg issues in aging: Which happens first, physical or mental aging?

We all know older people who are mentally sharp but physically weak, or still physical healthy but showing signs of mental decline. And we all hope that we will be one of the lucky ones who will be able to maintain both our mental sharpness and our physical health. Aging in various domains is, of course, interconnected: healthy body supports healthy mind and sharp mind remembers to take its medicine and to eat well. Our goal in this research was to examine changes in physical and mental aging in the same group of older adults over a period of up 19 years. In that way, we could measure actual changes in functioning and determine which changes happened first: physical or mental. Even further, we could see if changes in one measure lead to subsequent changes in the other.

Individuals aged 50 and older participate in the Swedish Adoption/Twin Study of Aging every 3 or 4 years. We were able to use information from 813 of these adults. In order to be thorough, we measured 4 types of mental function and 3 types of physical function. Mental function included measures of verbal ability (like vocabulary), spatial abilities (like doing jigsaw puzzles), memory, and speed (how fast you can process information). Physical function included measures of balance, flexibility, and hand coordination and precise movements. Performance on all of these measures declines with age, but not at the same rate. Verbal ability can remain fairly stable until after age 70, but speed declines pretty steadily from about age 30. Physical functions tend to show slower decline up to age 70 and then faster decline after that.

When we looked at all possible relationships between patterns of change across measures of physical and mental aging, we found that the only links were between speed of processing information and two of the physical measures: balance and hand coordination. Next, we asked the chicken and egg question: which function changed first and lead to changes in the other function? Our results showed us that physical function (both balance and hand coordination) showed decline earlier in aging and influenced later changes in speed of processing information.

We have completed other similar analyses suggesting that lung function (ability to breathe well and deeply) changes first in aging and also leads to later changes in speed of processing. Then we found that speed of processing changes earlier in aging and influences later changes in other mental function such as spatial ability. When we put all of these studies together, a picture emerges of a chain of events that may lead to mental decline. It is possible that lung function contributes to changes with age in physical function, which contributes to changes with age in speed of processing, with contributes to changes with age in other areas of mental functioning. If that pattern is true, then it produces some suggestions about how to maintain our mental faculties. It appears that maintaining the health of our lungs – by exercising and quitting smoking – could also help us maintain the health of our minds. If that conclusion seems a bit far-fetched, keep in mind that other studies have found that exercise helps to support mental functioning.

Publication

[Temporal Dynamics of Motor Functioning and Cognitive Aging.](#)

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