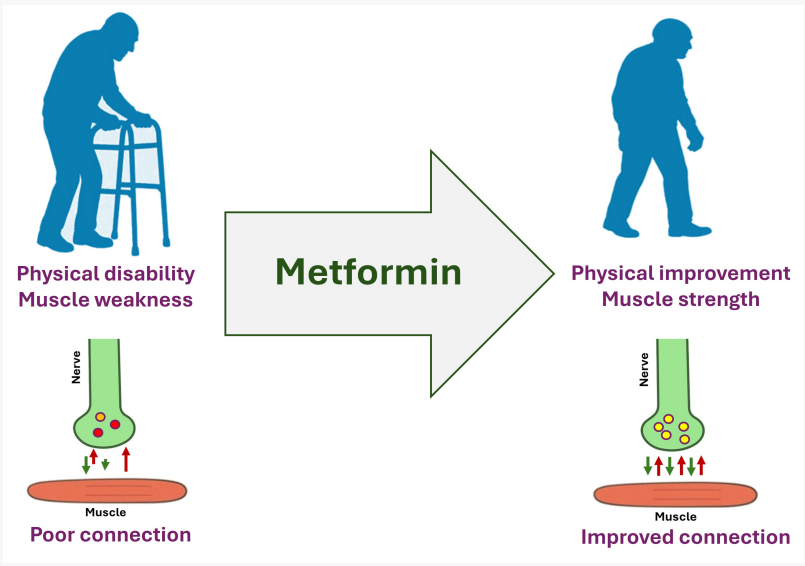
Metformin could treat health conditions of old people, particularly those with functional disability, study finds

Metformin, one of the most used drugs on the planet, has the potential to improve old age ailments like physical disability, muscle weakness and poor handgrip.

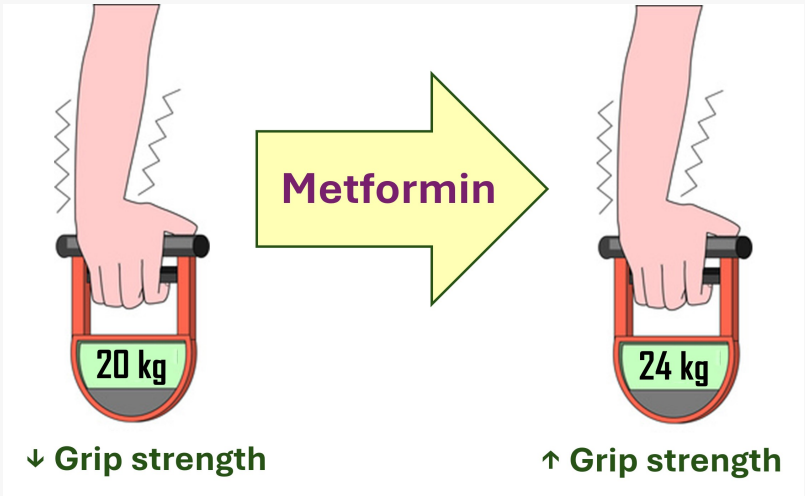
SHARJAH, EMIRATE OF SHARJAH, UNITED ARAB EMIRATES, May 8, 2025 /EINPresswire.com/ -- Metformin, touted as the world's most used anti-diabetic drug, has the potential to improve old age disabilities, such as muscle weakness and poor physical performance, according to University of Sharjah researchers.

A study led by the university concluded that metformin improves handgrip strength and physical performance, partly by enhancing the interface of nerve and muscle, termed the neuromuscular junction (NMJ).

The researchers maintained that their data was "clinically relevant for geriatric men with functional disabilities. "Altogether, the restorative effects of metformin on skeletal muscle and physical capacity involve NMJ stabilization."



Metformin has the potential to improve old age physical disability. Credit: Rizwan Qaisar



The study provides evidence of an improvement in handgrip strength of diabetic men taking metformin. Credit: Rizwan Qaisar

The researchers reported their findings in a study published in the journal Archives of Gerontology and Geriatrics. (Original Source URL:

https://doi.org/10.1016/j.archger.2024.105587)

Scientists have for long identified the protective effects of metformin on skeletal muscle and physical capacity; however, the relevant mechanisms remained poorly understood.

In their study, the authors investigated the potential contribution of the NMJ degradation to muscle weakness and physical compromise in geriatric men taking metformin.

Lead author Rizwan Qaisar, University of Sharjah's associate professor of Basic Medical Sciences, said, "Metformin, a common diabetes drug, may hold a key to maintaining strength and mobility in older age by enhancing the crosstalk between the brain and muscles."

"Beyond blood sugar control, this research unveils a potential new role for metformin: supporting the very machinery of movement and physical capacity in older men."

Metformin is reported to be one of the most commonly used medicines on the planet, with an estimated 200 million people taking it on a daily basis.

The drug has been used for over 60 years to treat type 2 diabetes mellitus due to its proven ability to lower plasma glucose levels.
The study found "a reduction in plasma biomarkers of NMJ degradation, suggesting potential contributions of NMJ stability to muscle restoration due to metformin usage."

Asked about the significance of the study, associate professor and co-author Asima Karim described the findings as "good tidings" for the elderly. "As we advance in age, the connection between our nerves and muscles weakens. Our findings indicate that metformin might help fortify this link, contributing to greater mobility in older men."

The authors evaluated 220 non-diabetic men for eligibility criteria and potential recruitment. After excluding 72 participants, who could not meet the eligibility criteria, they randomized the remaining 148 into a placebo group who appeared they were taking the drug with no therapeutic benefit, and those taking metformin, the real drug.

They write, "The participants in the metformin group received 1700 mg of metformin divided into two doses every day for 16 weeks.

"The participants in the placebo group were provided with similar pills without active ingredients. The participants and the investigators were kept blinded to the composition of the pills."

The authors provided evidence of an improvement in handgrip strength, walking speed, and physical capacity of the participants taking metformin.

The concomitant reduction in the biomarkers of NMJ degradation "suggests a potential coupling

between NMJ restoration and muscle health in older adults taking metformin," the researchers noted.

Sharjah University's associate professor of basic medical sciences and co-author Firdos Ahmad, said, "Just as a strong foundation supports a building, a stable neuromuscular junction underpins muscle health. Our findings point to metformin's role in reinforcing this foundation in aging men.

"The golden years should not be defined by frailty. This research illuminates a potential role for metformin in supporting muscle health and physical capacity in old age."

Despite its interesting findings stemming from a clinically and biologically relevant data analysis, the authors admit that their study has its own limitations since it is wholly restricted to male participants.

"We could not recruit an adequate number of women to obtain data of clinical and statistical relevance. This was primarily because of socioeconomic and cultural reasons.

"Therefore, a fundamental limitation of this study is the inclusion of only male participants. Hence, the generalizability of our findings to females remains to be determined."

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