inactivity in the near future. In certain embodiments, HMB is administered to the subject in an amount, manner, and for a time sufficient to lessen the increase or decrease in circulating levels of C-peptide, Insulin-Like Growth Factor-Binding Protein 2 (IGFBP-2), and/or Leptin that occurs with prolonged physical inactivity in untreated control subjects. In one embodiment, HMB is administered in an amount, manner, and for a time sufficient to reduce the increase in C-peptide that occurs with prolonged physical inactivity in untreated control subjects. In another embodiment, HMB is administered in an amount, manner, and for a time sufficient to reduce the increase in circulating Leptin that occurs with prolonged physical inactivity in untreated control subjects. In another embodiment, HMB is administered in an amount, manner, and for time sufficient to attenuate the decrease in circulating IGFBP-2 that occurs with prolonged physical inactivity in untreated control subjects. In another embodiment, HMB is administered in an amount, manner, and for a time sufficient to keep the levels of C-peptide and/or IGFBP-2 in a biological sample taken from the subject 3 or more days after the subject has become physically inactive comparable to the baseline levels of C-peptide and/or IGFBP-2.

[0005a] The present disclosure also provides use of a therapeutically effective amount of β-hydroxy-β-methylbutyric acid (HMB) or a salt thereof, in the preparation of a medicament for reducing the effect of prolonged physical inactivity on insulin resistance in a subject who is experiencing or is expected to experience prolonged physical inactivity in the near future.

[0005b] The present disclosure also provides use of a composition comprising β-hydroxy-β-methylbutyric acid or a salt thereof, in the manufacture of a medicament for treating insulin resistance in a subject who is experiencing or is expected to experience prolonged physical inactivity in the near future

[0006] Also provided are methods of evaluating the efficacy of an intervention on the insulin resistance associated with prolonged physical inactivity in a subject. In one embodiment, the method comprises: (a) measuring levels of one or more biomarkers selected from the group consisting of IGFBP-2, Leptin, and C-peptide in a biological sample taken from the subject prior to or on the day the subject becomes physically inactive; (b) administering an intervention to the subject, wherein the intervention is first administered to the subject before or on the day the subject becomes physically inactive; (c) measuring levels of said one or more biomarkers in a biological sample taken from the subject 3 days or more days after the subject becomes physically inactive; (d) calculating the difference between the levels measured in steps (a) and

(c) for each of said one or more biomarkers; (e) comparing the one or more differences calculated in (d) to one or more control values based on the differences in the levels of said one or more biomarkers in comparable biological samples taken from untreated control subjects at comparable time points; and (f) characterizing the intervention as being efficacious if the one or more differences calculated in (d) are smaller than the control values for said one or more biomarkers.

What is claimed is:

1. ~~A method of reducing the effect of prolonged physical inactivity on insulin resistance in a subject who is experiencing or is expected to experience prolonged physical inactivity in the near future, the method comprising: administering~~ Use of a therapeutically effective amount of β-hydroxy-β-methylbutyric acid (HMB) or a salt thereof ~~to the subject~~, in the preparation of a medicament for reducing the effect of prolonged physical inactivity on insulin resistance in a subject who is experiencing or is expected to experience prolonged physical inactivity in the near future.

2. The ~~method~~ use of claim 1, wherein HMB is administered in an amount, manner, and for a time sufficient to lessen the increase in circulating levels of C-peptide, the decrease in circulating levels of IGFBP-2, and/or the increase in circulating levels of Leptin that occurs with prolonged physical inactivity in untreated control subjects.

3. The ~~method~~ use of claim 1, wherein HMB is administered in an amount, manner, and for a time sufficient to reduce the increase in circulating levels of C-peptide that occurs with prolonged physical inactivity in untreated control subjects.

4. The ~~method~~ use of claim 1, wherein HMB is administered in an amount, manner and for a time sufficient to reduce the increase in circulating levels of Leptin that occurs with prolonged physical inactivity in untreated control subjects.

5. The ~~method~~ use of claim 1, wherein HMB is administered in an amount, manner and for a time sufficient to attenuate the decrease in circulating levels of IGFBP-2 that occurs with prolonged physical inactivity in untreated control subjects.

6. The ~~method~~ use of claim 1, wherein HMB is administered in an amount, manner and for a time sufficient to keep the levels of C-peptide and/or IGFBP-2 in biological samples taken from the subject following 3 or more days of physical inactivity comparable to the baseline levels of C-peptide and/or IGFBP-2 in a biological sample taken from the subject at the beginning of or prior to the physical inactivity.

7. The ~~method~~ use of claim 1, wherein the subject is a human subject.

8. The ~~method~~ use of claim 7, wherein the human subject is an adult human subject.

9. The method of claim 7, wherein the human subject is an elderly human subject.

10. A method of evaluating the efficacy of an intervention on insulin resistance in a subject who is undergoing or is expected to undergo a prolonged period of physical inactivity in the near future, the method comprising:

(a) measuring levels of one or more biomarkers selected from IGFBP-2, Leptin, and C-peptide in a biological sample taken from the subject before or on the day the subject becomes physically inactive;

(b) administering the intervention to the subject, wherein the intervention is first administered to the subject before or on the day the subject first becomes physically inactive;

(c) measuring levels of the one or biomarkers measured in step (a) in a biological sample taken from the subject at 3 or more days after the subject has become physically inactive;

(d) calculating the difference between the levels measured in steps (a) and (c) for each of said one or more biomarkers;

(e) comparing the one or more differences calculated in step (d) to one or more control values based on the difference between levels of said one or more biomarkers in comparable biological samples taken from untreated control subjects at comparable time points; and

(f) characterizing the intervention as being efficacious if the one or more differences calculated in step (d) are smaller than the respective control values for said one or more biomarkers.

11. The method of claim 10, wherein the biomarker is C-peptide.

12. The method of claim 10, wherein the biomarker is IGFBP-2.

13. The method of claim 10, wherein the biomarker is Leptin.

14. The method of claim 10, wherein the subject is a human subject.

30. ~~A composition for use in the treatment of insulin resistance in a subject who is experiencing or is expected to experience prolonged physical inactivity in the near future, wherein the~~ Use of a composition ~~comprises~~ comprising β-hydroxy-β-methylbutyric acid or a salt thereof, in the manufacture of a medicament for treating insulin resistance in a subject who is experiencing or is expected to experience prolonged physical inactivity in the near future .