CLAIMS

1. A method for providing a stimulus signal through a target, the stimulus signal including a series of current pulses for impeding locomotion of the target, the method comprising:

selecting a first sequence of connections, the first sequence of connections includes an ordered list of two or more connections;

setting a first connection of the first sequence of connections as a selected connection;

providing one pulse of the stimulus signal to the selected connection;

determining a quality of the selected connection;

setting a second connection of the first sequence of connections as the selected connection, the first connection of the first sequence of connections follows a last connection of the first sequence of connections with respect to setting the selected connection;

repeating the steps of providing, determining, and setting a next connection of the first sequence of connections for a period of time; and

selecting a next sequence of connections based on the quality of one or more of the two or more connections of the first sequence of connections.

2. The method of claim 1 wherein the step of determining comprises detecting:

whether an amount of charge that flows through the selected connection is greater than a first threshold;

whether a charge of the one pulse arced between terminals; and

whether the amount of charge provided by a signal generator is greater than a second threshold.

3. The method of claim 1 wherein at least one of setting the first connection and setting the second connection comprises selecting a first wire-tethered electrode and a second wire-tethered electrode associated with the selected connection.

4. The method of claim 1 wherein the step of providing the one pulse of the stimulus signal comprises energizing the selected connection with the one pulse of the stimulus signal.

5. The method of claim 1 wherein the step of providing the one pulse of the stimulus signal comprises delivering a charge of the one pulse via the selected connection in response to the quality of the selected connection being determined as good.

6. The method of claim 1 wherein the step of providing the one pulse of the stimulus signal comprises not delivering a charge of the one pulse via the selected connection in response to the quality of the selected connection being determined as bad.

7. The method of claim 1 wherein the step of repeating comprises providing pulses of the stimulus signal to connections of the first sequence of connections having the quality determined as good at a first maximum rate.

8. The method of claim 7 wherein the first maximum rate is 22 pulses per second.

9. The method of claim 1 wherein the step of repeating comprises providing pulses of the stimulus signal to all connections of the first sequence of connections at a second maximum rate, the second maximum rate comprising a sum of all pulse rates for each connection of the first sequence of connections.

10. The method of claim 9 wherein the second maximum rate is 44 pulses per second.

11. The method of claim 1 wherein the step of repeating comprises:

providing pulses of the stimulus signal to connections of the first sequence of connections having the quality determined as good at a first maximum rate; and

providing pulses of the stimulus signal to all connections of the first sequence of connections at a second maximum rate, wherein:

the first maximum rate is between 11 pulses per second and 50 pulses per second, and

the second maximum rate is between 22 pulse per second and 50 pulses per second.

12. A conducted electrical weapon ("CEW") comprising:

a processing circuit;

a signal generator configured to provide a stimulus signal, wherein the stimulus signal includes a series of pulses; and

three or more electrodes electrically coupled to the signal generator, wherein the three or more electrodes are configured to be launched toward a target to provide the stimulus signal through the target, and wherein the processing circuit and signal generator are configured to cooperate to perform operations comprising:

setting a first connection of a first sequence of connections as a selected connection, wherein the first sequence of connections includes an ordered list of two or more connections;

selecting two electrodes from the three or more electrodes in accordance with the selected connection;

providing one pulse of the stimulus signal to the two electrodes;

determining a quality of the selected connection;

setting a second connection of the first sequence of connections as the selected connection, the first connection of the first sequence of connections follows a last connection of the first sequence of connections;

repeating the operations of selecting, providing, determining, and setting a next connection; and

select a next sequence of connections based on the quality of one or more of the two or more connections of the first sequence of connections.

13. The CEW of claim 12 wherein:

the signal generator comprises three or more transformers and three or more switches,

a secondary winding of each transformer is coupled to one electrode from the three or more electrodes,

a primary winding of each transformer is coupled to one switch from the three or more switches, and

the processing circuit is configured to control the three or more switches to provide the one pulse of current to the two electrodes.

14. The CEW of claim 12 wherein the operation of determining the quality of the selected

connection comprises detecting:

whether an amount of charge that flows through the selected connection is greater than a first threshold,

whether a charge of the one pulse arced between terminals of the CEW, and

whether the amount of charge provided by the signal generator is greater than a second threshold.

15. The CEW of claim 12 further comprising a memory in electronic communication with the processing circuit, wherein the memory is configured to store the first sequence of connections, and wherein the processing circuit is configured to read the first sequence of connections from the memory.

16. The CEW of claim 12 wherein the operations further comprise:

providing a first maximum pulse rate to each connection of the first sequence of connections having the quality determined as good; and

providing a second maximum pulse rate to all connections of the first sequence of connections, wherein the second maximum pulse rate is a sum of all pulse rates for each connection of the first sequence of connections.

17. The CEW of claim 16 wherein the first maximum rate is between 11 pulses per second and 50 pulses per second.

18. The CEW of claim 16 wherein the second maximum rate is between 22 pulse per second and 50 pulses per second.

19. The CEW of claim 12 wherein the two electrodes selected from the three or more electrodes correspond to one connection of the first sequence of connections.

20. A method comprising:

receiving, by a processor, a first quality of connection for each pair of electrodes from two or more pairs of electrodes;

determining, by the processor, a first sequence of connections based on the first quality of connection, wherein the first sequence of connections comprises an ordered list of a plurality of connections, and wherein each connection of the plurality of connections comprises a pair of electrodes from the two or more pairs of electrodes;

providing, by the processor, one pulse of a stimulus signal to each connection from the plurality of connections based on the ordered list from the first sequence of connections;

determining, by the processor, a second quality of connection for each pair of electrodes; and

in response to the second quality of connection for any pair of electrodes being different than in the first quality of connection, selecting, by the processor, a second sequence of connections based on the second quality of connection, wherein the second sequence of connections is different from the first sequence of connections.