US007946959B2

(12) **United States Patent**
Shum et al.

(10) **Patent No.: US 7,946,959 B2**
(45) **Date of Patent: May 24, 2011**

(54) **TRAINING SCRIPTS**

(75) Inventors: **Albert Shum**, Portland, OR (US); **Theodore H Helprin**, Portland, OR (US); **James W Clark**, Portland, OR (US)

(73) Assignee: **Nike, Inc.**, Beaverton, OR (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 1321 days.

(21) Appl. No.: **10/413,366**

(22) Filed: **Apr. 15, 2003**

(65) **Prior Publication Data**

US 2003/0224337 A1 Dec. 4, 2003

Related U.S. Application Data

(60) Provisional application No. 60/386,210, filed on May 30, 2002.

(51) **Int. Cl.**
A63B 71/00 (2006.01)

(52) **U.S. Cl.** **482/8**; 482/1; 482/9; 482/901; 434/247

(58) **Field of Classification Search** 482/1–9, 482/900–902; 434/247; 601/23
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,571,682	A		2/1986	Silverman et al.
4,776,583	A	*	10/1988	Jennings 482/63
4,828,257	A		5/1989	Dyer et al.
4,867,442	A		9/1989	Matthews
4,919,418	A		4/1990	Miller
5,089,960	A		2/1992	Sweeney, Jr.
5,213,555	A		5/1993	Hood et al.
5,466,200	A		11/1995	Ulrich et al.
5,547,439	A		8/1996	Rawls et al.
5,645,509	A	*	7/1997	Brewer et al. 482/4
5,655,997	A		8/1997	Greenberg et al.
5,759,043	A		6/1998	Craig
5,785,632	A		7/1998	Greenberg et al.
5,799,652	A	*	9/1998	Kotliar 128/205.11
5,890,995	A		4/1999	Bobick et al.
5,890,997	A		4/1999	Roth
5,899,963	A		5/1999	Hutchings
5,916,063	A		6/1999	Alessandri

(Continued)

FOREIGN PATENT DOCUMENTS

DE 1 101 511 A2 5/2001

(Continued)

OTHER PUBLICATIONS

"Health Care, High-Tech Style," by Bernard Wyskocki, Jr., *The Wall Street Journal*, Apr. 17, 2001, 2 pgs.

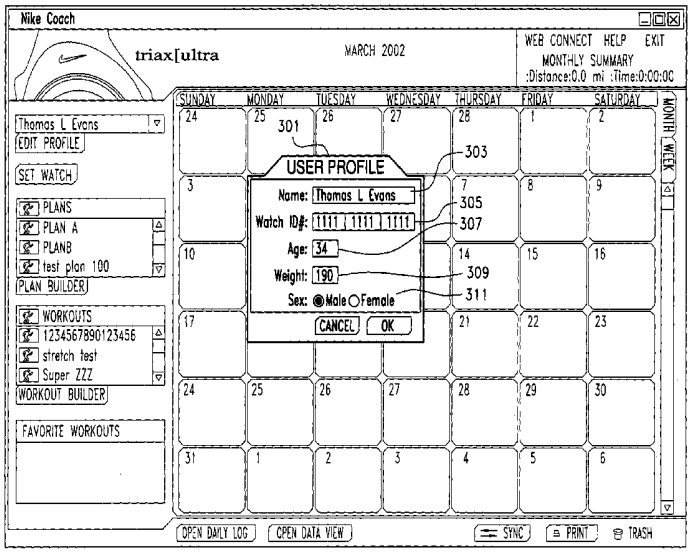
(Continued)

Primary Examiner — Glenn Richman
(74) *Attorney, Agent, or Firm* — Banner & Witcoff Ltd.

(57) **ABSTRACT**

A training script device is described that conveniently allows a user to create a training script defining one or more steps of a workout routine, where each step may include an activity, a duration for performing that activity, and an intensity at which the activity is to be performed. Further, one or more steps of the training script can be self-starting in response to performance data detected by sensors of training script device executing the training script. This conveniently frees the athlete from having to continuously monitor the status of his or her workout activities. Still further, the training script device conveniently allows a user to transfer training scripts to other training script devices, so that athletes can share successful training scripts.

21 Claims, 27 Drawing Sheets



U.S. PATENT DOCUMENTS

5,921,891	A	7/1999	Browne	
6,013,007	A	1/2000	Root et al.	
6,027,428	A	2/2000	Thomas et al.	
6,050,924	A	4/2000	Shea	
6,058,932	A *	5/2000	Hughes	128/200.24
6,059,576	A	5/2000	Brann	
6,066,075	A	5/2000	Poultin	
6,188,927	B1 *	2/2001	Lu et al.	607/17
6,287,239	B1	9/2001	Hernandez	
6,638,198	B1 *	10/2003	Shea	482/8
6,702,720	B2 *	3/2004	Dardik	482/13
6,736,759	B1 *	5/2004	Stubbs et al.	482/8
6,749,537	B1 *	6/2004	Hickman	482/8
6,921,351	B1 *	7/2005	Hickman et al.	482/8
2004/0102931	A1 *	5/2004	Ellis et al.	702/188

FOREIGN PATENT DOCUMENTS

DE	199 55 720 C 2	4/2002
WO	02/39363	5/2002

OTHER PUBLICATIONS

Printout of Web page (Netpulse Frequent Fitness Program), dated Dec. 3, 1999, 3 pgs.
Printout of Web page from Interactive Fitness Technologies, Inc. (UltraCoach Standard), dated Nov. 30, 1999, 3 pgs.
Printout of Web page from Interactive Fitness Technologies, Inc. (UltraCoach Multi-Sport Training Software Products Catalog), dated Sep. 1999, 12 pgs.
Printout of Web page from Interactive Fitness Technologies, Inc. (UltraCoach VR: How it Works?), dated Nov. 30, 1999, 2 pgs.
Printout of Web page from Interactive Fitness Technologies, Inc. (UltraCoach VR Featues), dated Nov. 30, 1999, 3 pgs.
Printout of Web page from Interactive Fitness Technologies, Inc. (UltraCoach Fit Software Comparisons), dated Nov. 30, 1999, 2 pgs.
Printout of Web page from Interactive Fitness Technologies, Inc. (UltraCoach Home Page), dated Nov. 30, 1999, 2 pgs.
European Patent Application No. 10197484.8 Search Report dated Mar. 15, 2011.

* cited by examiner

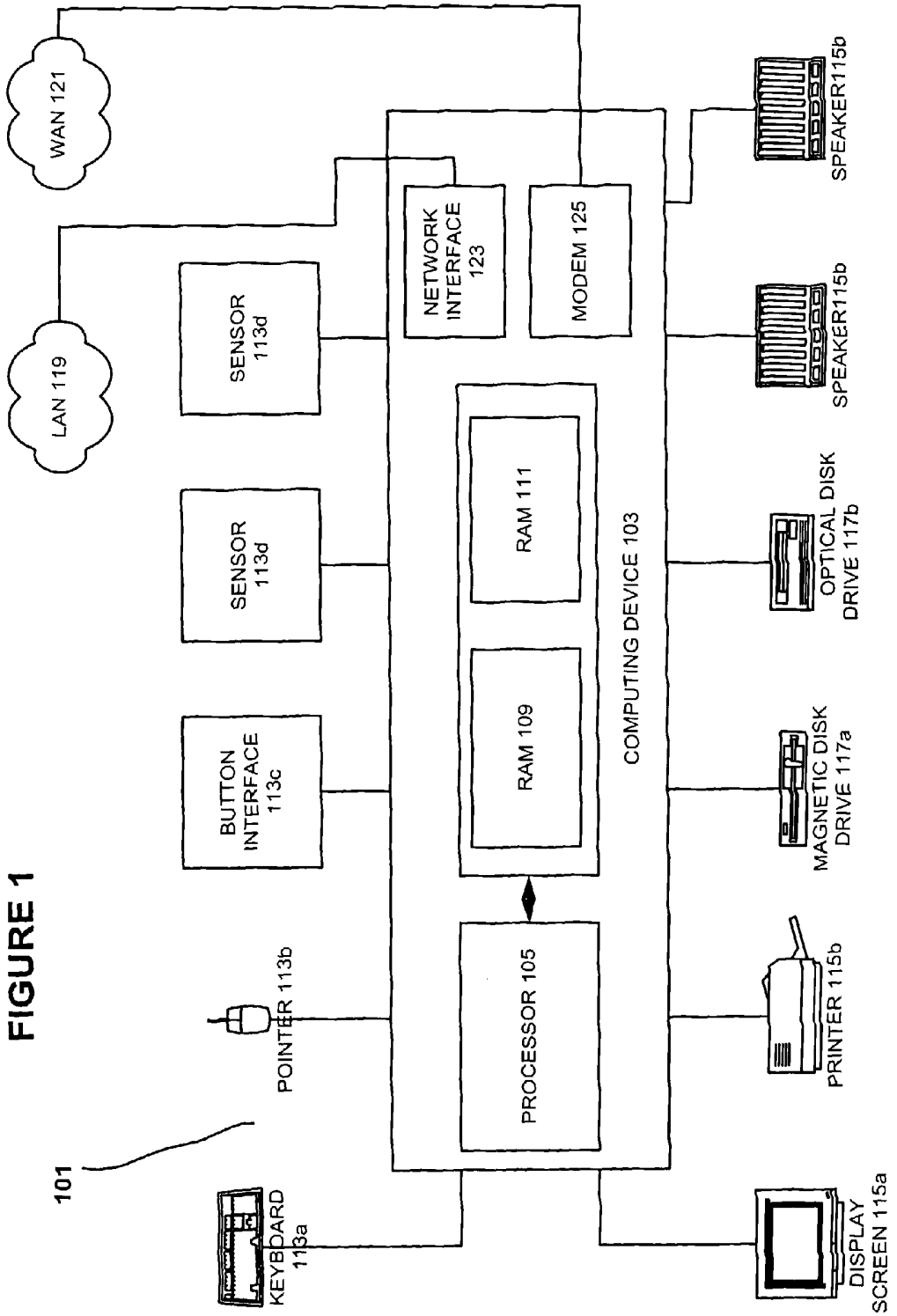
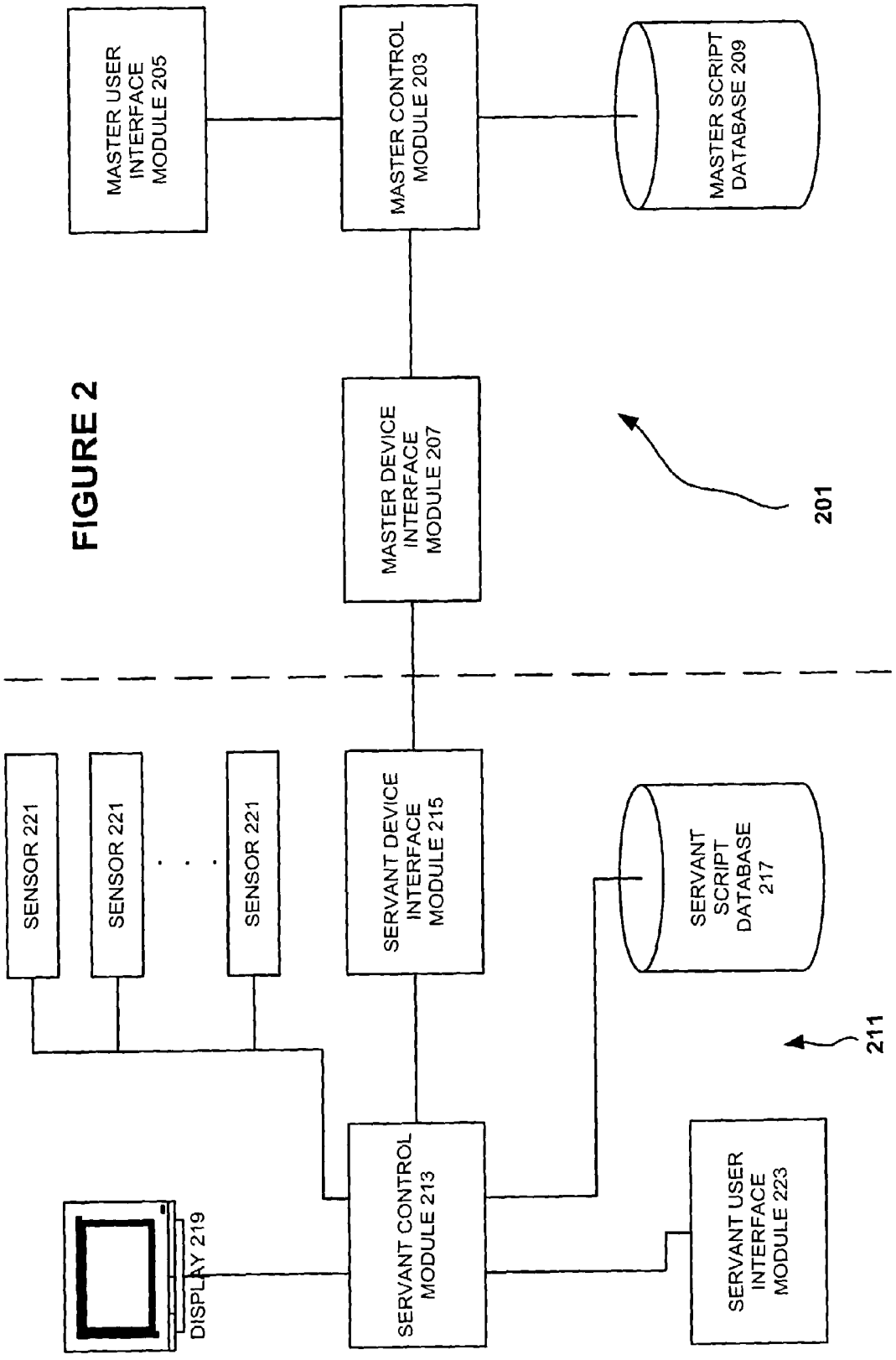

WAN 121
LAN 119
NETWORK INTERFACE 123
MODEM 125
SENSOR 113d
SENSOR 113d
BUTTON INTERFACE 113c
RAM 111
RAM 109
COMPUTING DEVICE 103
PROCESSOR 105
SPEAKER115b
SPEAKER115b
OPTICAL DISK DRIVE 117b
MAGNETIC DISK DRIVE 117a
PRINTER 115b
DISPLAY SCREEN 115a
POINTER 113b
KEYBOARD 113a
101

FIGURE 1

FIGURE 2


MASTER USER INTERFACE MODULE 205
MASTER CONTROL MODULE 203
MASTER SCRIPT DATABASE 209
MASTER DEVICE INTERFACE MODULE 207
201
SENSOR 221
SENSOR 221
SENSOR 221
SERVANT DEVICE INTERFACE MODULE 215
SERVANT SCRIPT DATABASE 217
211
DISPLAY 219
SERVANT CONTROL MODULE 213
SERVANT USER INTERFACE MODULE 223

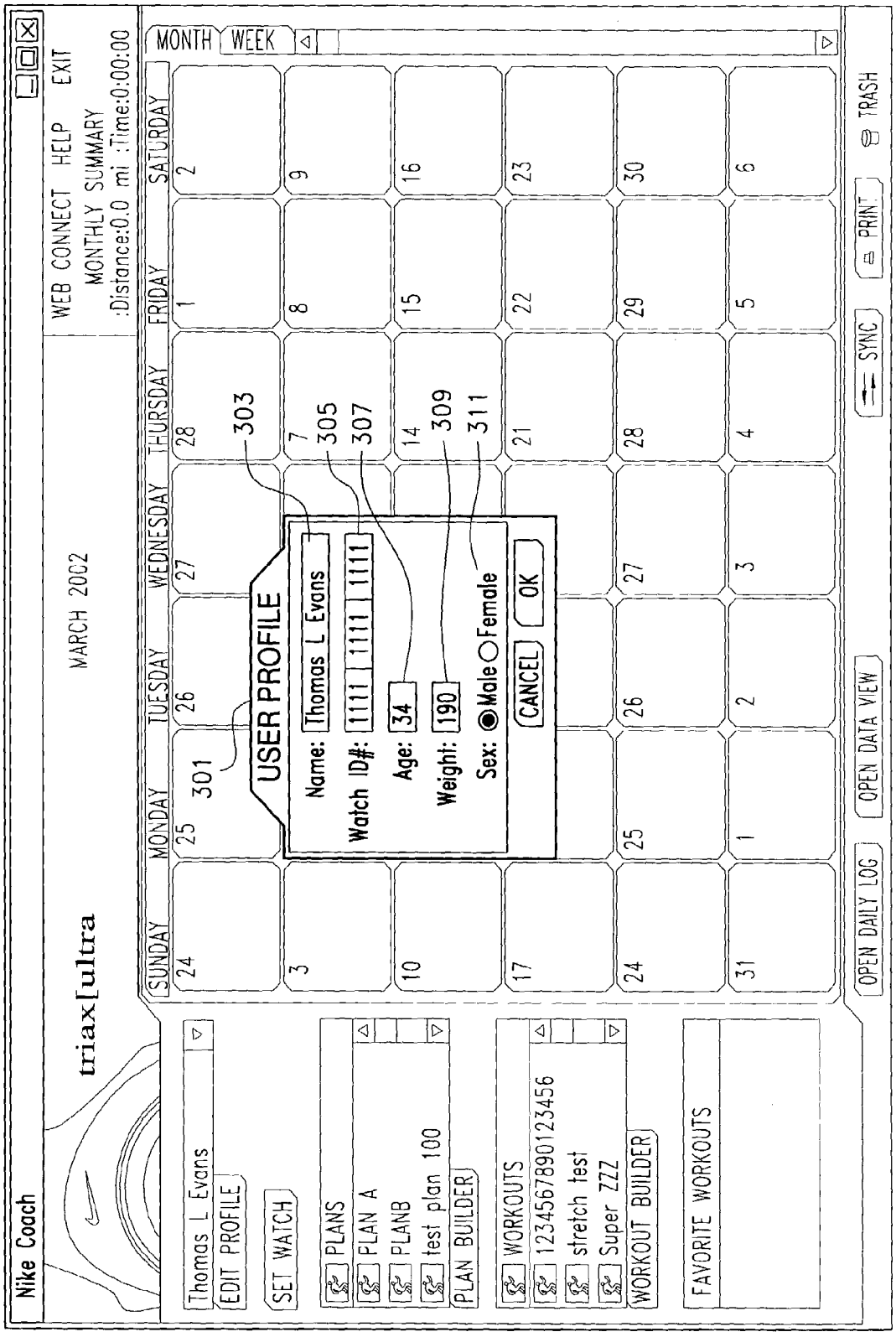

Nike Coach
triax[ultra
WEB CONNECT HELP EXIT
MONTHLY SUMMARY
:Distance:0.0 mi :Time:0:00:00
MARCH 2002
MONTH WEEK
SUNDAY MONDAY TUESDAY WEDNESDAY THURSDAY FRIDAY SATURDAY
USER PROFILE
Name: Thomas L Evans
Watch ID#: 1111 1111 1111
Age: 34
Weight: 190
Sex: Male Female
CANCEL OK
301
303
305
307
309
311
Thomas L Evans
EDIT PROFILE
SET WATCH
PLANS
PLAN A
PLANB
test plan 100
PLAN BUILDER
WORKOUTS
12345678901234567
stretch test
Super ZZZ
WORKOUT BUILDER
FAVORITE WORKOUTS
OPEN DAILY LOG
OPEN DATA VIEW
SYNC
PRINT
TRASH

FIG.3

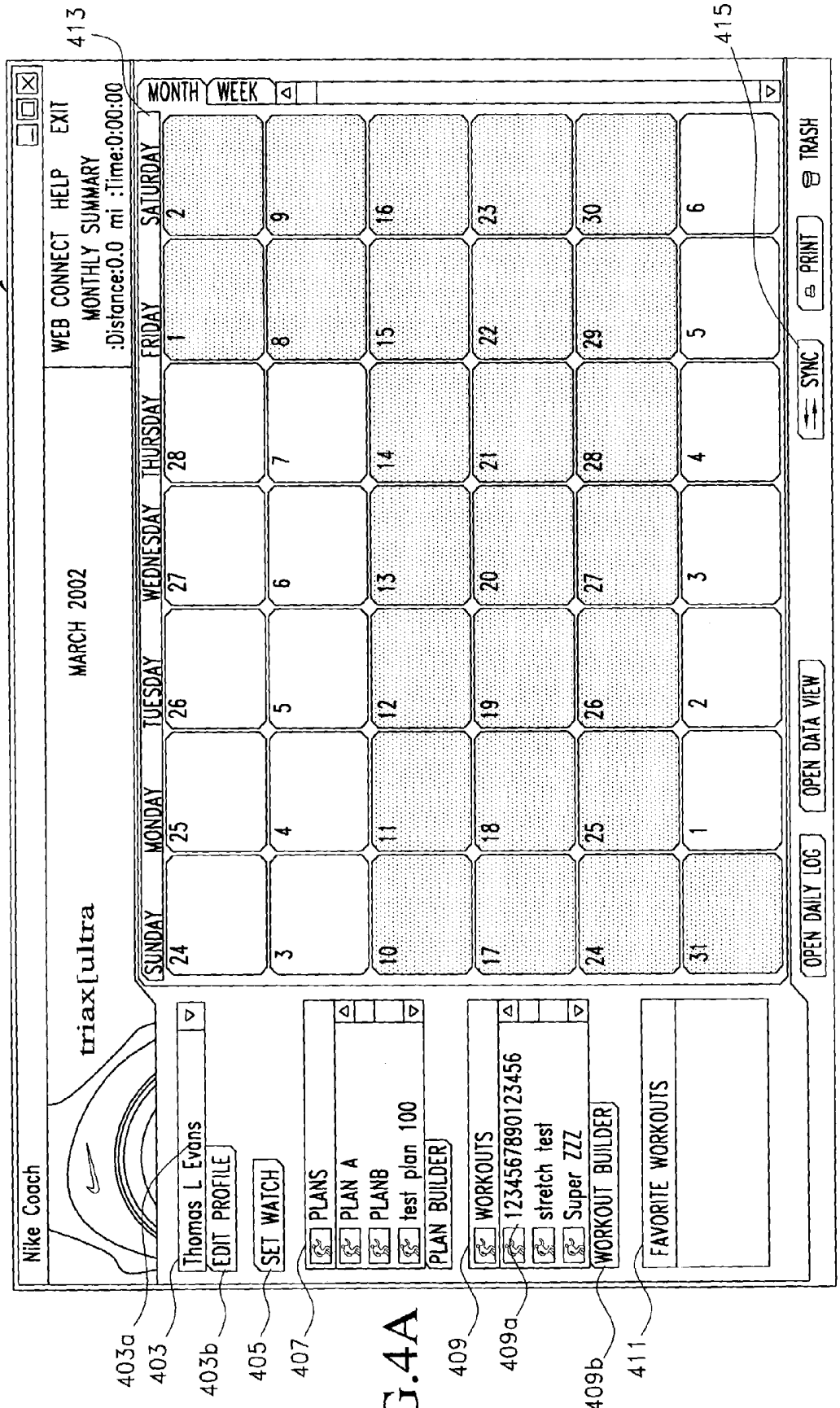

401
413
415
Nike Coach
triax[ultra
MARCH 2002
WEB CONNECT HELP EXIT
MONTHLY SUMMARY
:Distance:0.0 mi :Time:0:00:00
MONTH WEEK
SUNDAY MONDAY TUESDAY WEDNESDAY THURSDAY FRIDAY SATURDAY
SYNC PRINT TRASH
OPEN DAILY LOG OPEN DATA VIEW
Thomas L Evans
EDIT PROFILE
SET WATCH
PLANS
PLAN A
PLANB
test plan 100
PLAN BUILDER
WORKOUTS
1234567890123456
stretch test
Super ZZZ
WORKOUT BUILDER
FAVORITE WORKOUTS
403a
403
403b
405
407
409
409a
409b
411

FIG.4A

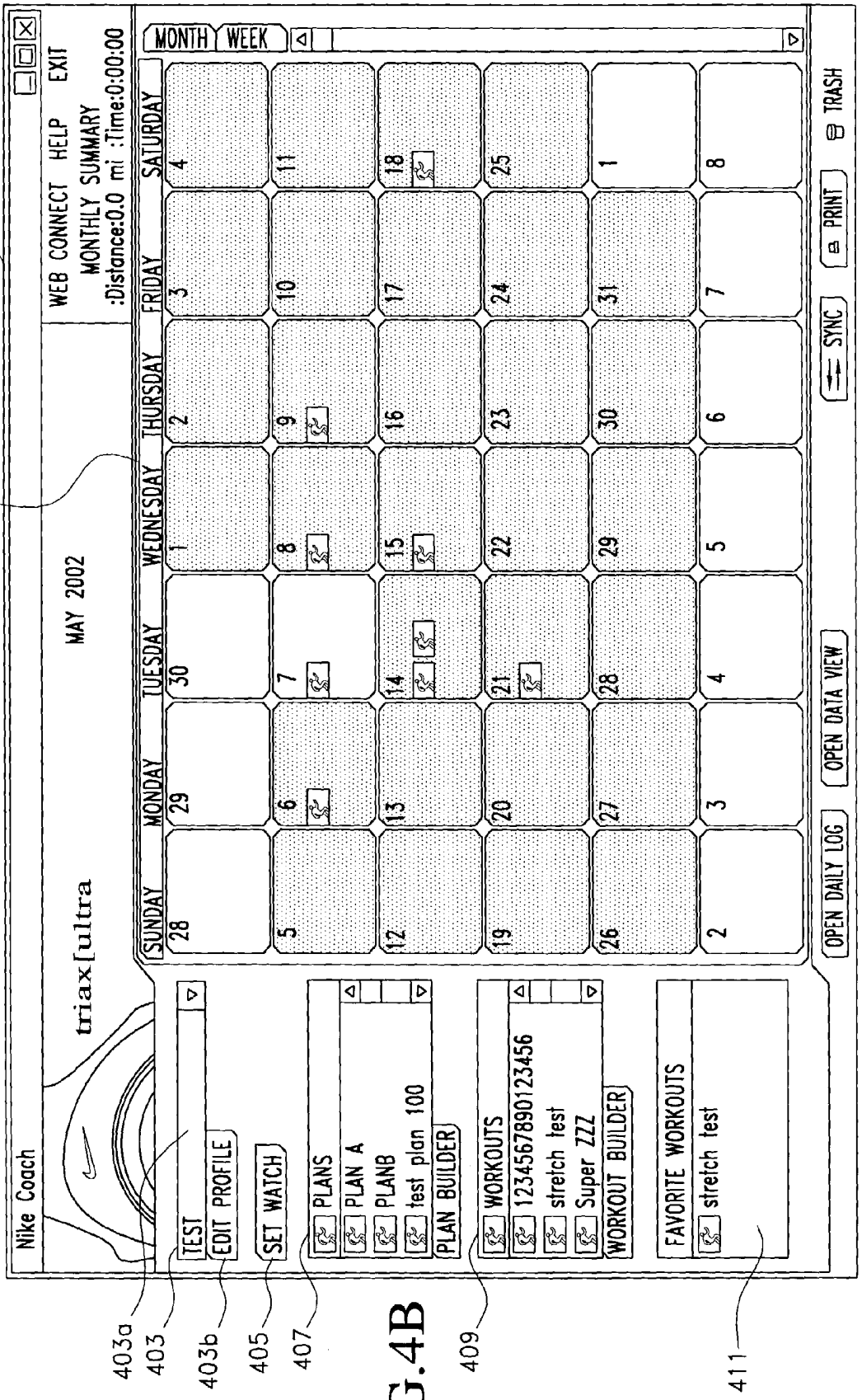

401
413
Nike Coach
triax[ultra
MAY 2002
WEB CONNECT HELP EXIT
MONTHLY SUMMARY
:Distance:0.0 mi :Time:0:00:00
MONTH WEEK
SUNDAY MONDAY TUESDAY WEDNESDAY THURSDAY FRIDAY SATURDAY
SYNC
PRINT
TRASH
OPEN DAILY LOG
OPEN DATA VIEW
TEST
EDIT PROFILE
SET WATCH
PLANS
PLAN A
PLANB
test plan 100
PLAN BUILDER
WORKOUTS
12345678901234567890
stretch test
Super ZZZ
WORKOUT BUILDER
FAVORITE WORKOUTS
stretch test
403a
403
403b
405
407
409
411

FIG.4B

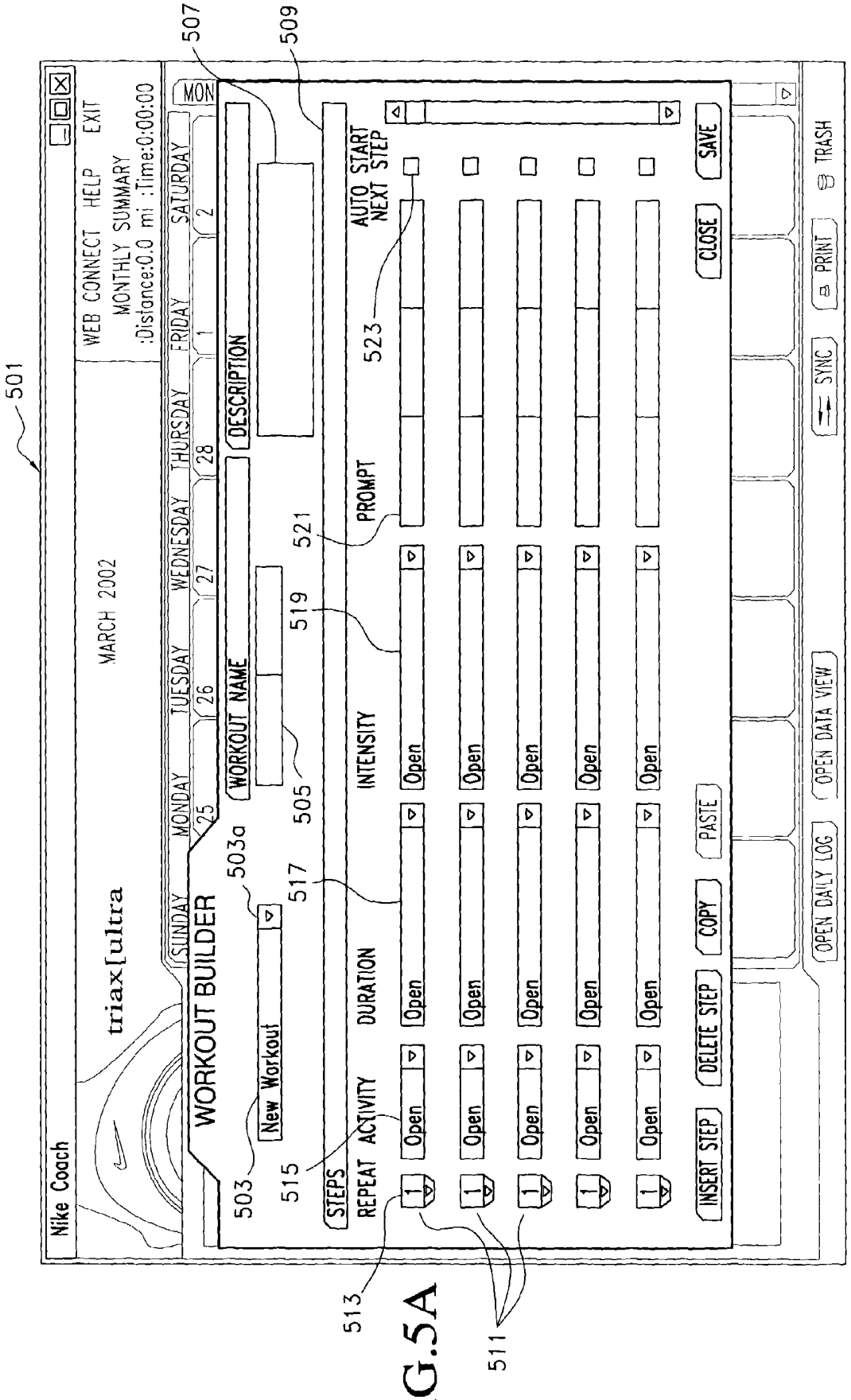

501
507
509
Nike Coach
triax[ultra
WEB CONNECT HELP EXIT
MONTHLY SUMMARY
:Distance:0.0 mi :Time:0:00:00
MARCH 2002
SUNDAY MONDAY TUESDAY WEDNESDAY THURSDAY FRIDAY SATURDAY
25 26 27 28 1 2
MON
WORKOUT BUILDER
503a
New Workout
503
515
517
505
519
521
523
WORKOUT NAME
DESCRIPTION
PROMPT
AUTO START NEXT STEP
STEPS
REPEAT ACTIVITY DURATION
INTENSITY
Open
1
513
511
INSERT STEP
DELETE STEP
COPY
PASTE
CLOSE
SAVE
OPEN DAILY LOG
OPEN DATA VIEW
SYNC
PRINT
TRASH

FIG.5A

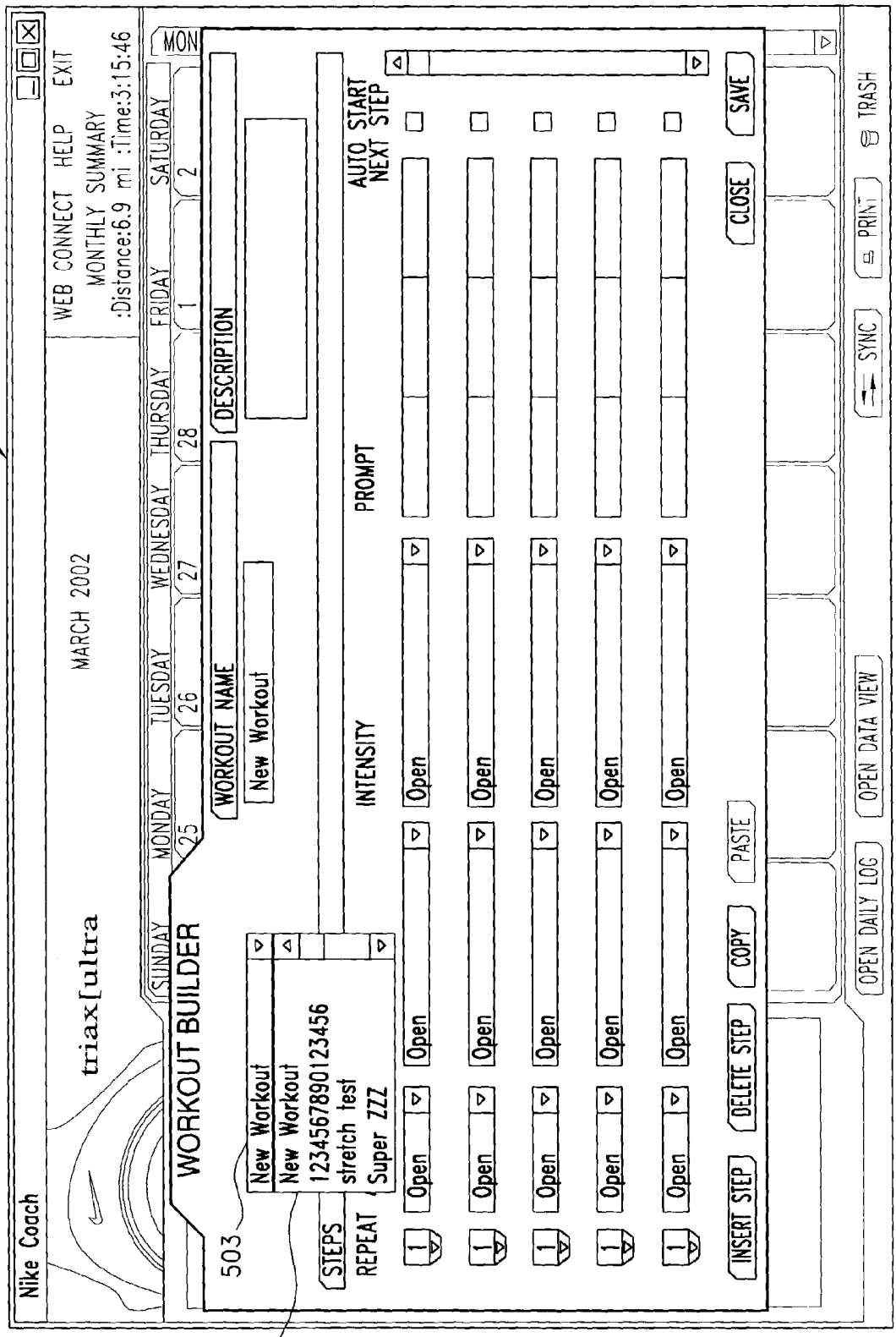

501
Nike Coach
triax[ultra
WEB CONNECT HELP EXIT
MONTHLY SUMMARY
:Distance:6.9 mi :Time:3:15:46
MARCH 2002
SUNDAY MONDAY TUESDAY WEDNESDAY THURSDAY FRIDAY SATURDAY
25 26 27 28 1 2
MON
WORKOUT BUILDER
503
503a
New Workout
New Workout
1234567890123456
stretch test
Super ZZZ
STEPS
REPEAT
WORKOUT NAME
New Workout
DESCRIPTION
INTENSITY
PROMPT
AUTO START
NEXT STEP
Open
SAVE
CLOSE
INSERT STEP
DELETE STEP
COPY
PASTE
OPEN DAILY LOG
OPEN DATA VIEW
SYNC
PRINT
TRASH

FIG.5B

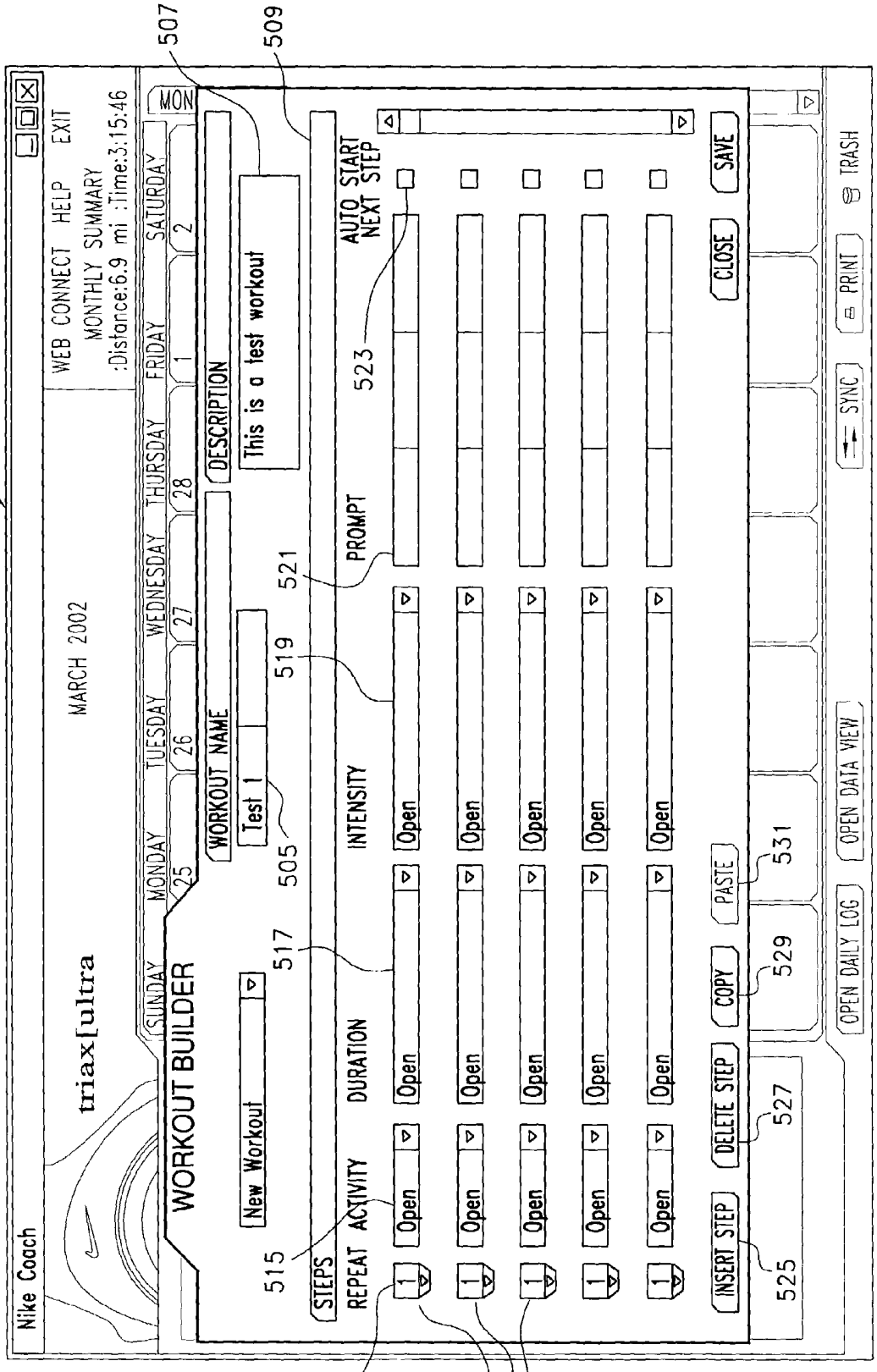

501
507
509
Nike Coach
triax[ultra
WEB CONNECT HELP EXIT
MONTHLY SUMMARY
:Distance:6.9 mi :Time:3:15:46
MARCH 2002
SUNDAY MONDAY TUESDAY WEDNESDAY THURSDAY FRIDAY SATURDAY
25 26 27 28 1 2
MON
WORKOUT BUILDER
New Workout
WORKOUT NAME
Test 1
DESCRIPTION
This is a test workout
AUTO START NEXT STEP
PROMPT
INTENSITY
DURATION
ACTIVITY
REPEAT
STEPS
Open
INSERT STEP
DELETE STEP
COPY
PASTE
CLOSE
SAVE
OPEN DAILY LOG
OPEN DATA VIEW
SYNC
PRINT
TRASH
505
513
511
515
517
519
521
523
525
527
529
531

FIG.5C

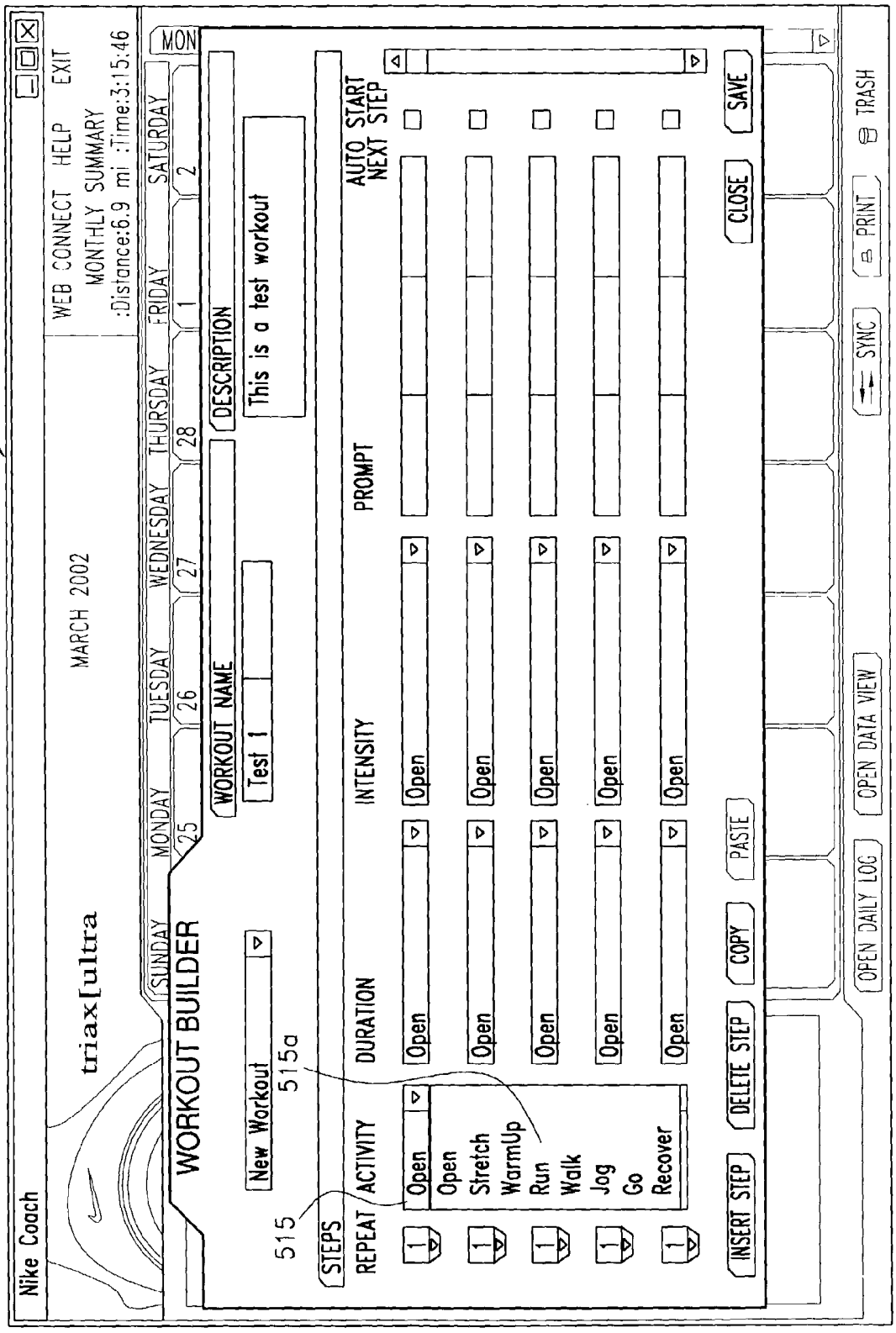

501
Nike Coach
triax[ultra
WEB CONNECT HELP EXIT
MONTHLY SUMMARY
:Distance:6.9 mi :Time:3:15:46
MARCH 2002
SUNDAY MONDAY TUESDAY WEDNESDAY THURSDAY FRIDAY SATURDAY
25 26 27 28 1 2
MON
WORKOUT BUILDER
WORKOUT NAME
Test 1
DESCRIPTION
This is a test workout
New Workout
515a
515
STEPS
REPEAT ACTIVITY DURATION INTENSITY PROMPT AUTO START NEXT STEP
Open Open Open Open
Open Stretch Open Open
Open WarmUp Open Open
Open Run Open Open
Open Walk Open Open
Open Jog Open Open
Open Go Open Open
Open Recover Open Open
INSERT STEP
DELETE STEP
COPY
PASTE
CLOSE
SAVE
OPEN DAILY LOG
OPEN DATA VIEW
SYNC
PRINT
TRASH

FIG.5D

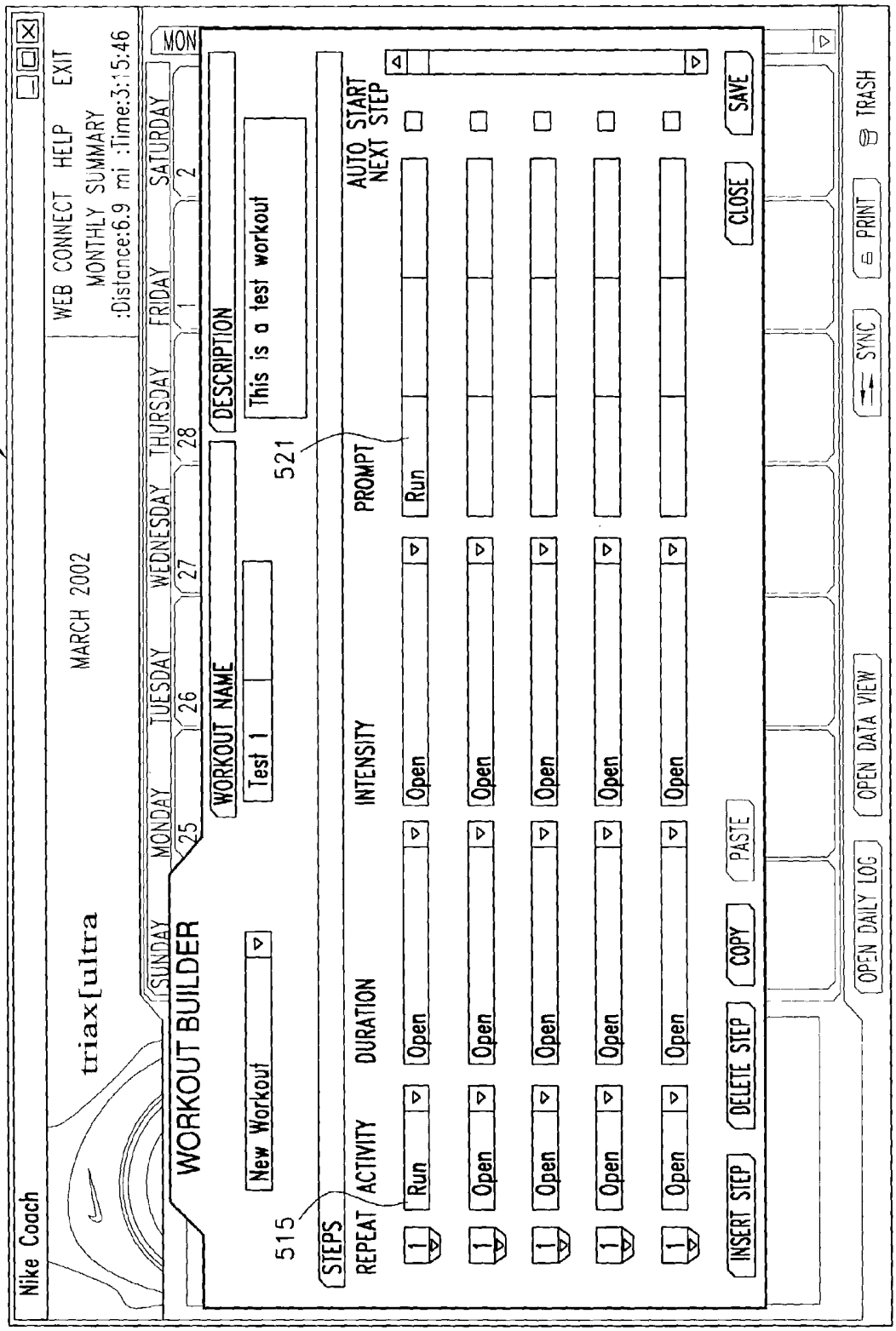

501
Nike Coach
triax[ultra
MARCH 2002
WEB CONNECT HELP EXIT
MONTHLY SUMMARY
:Distance:6.9 mi :Time:3:15:46
SUNDAY MONDAY TUESDAY WEDNESDAY THURSDAY FRIDAY SATURDAY
25 26 27 28 1 2
MON
WORKOUT BUILDER
New Workout
WORKOUT NAME
Test 1
DESCRIPTION
This is a test workout
521
515
STEPS
REPEAT ACTIVITY DURATION INTENSITY PROMPT AUTO START NEXT STEP
Run Open Run
Open Open
Open Open
Open Open
Open Open
INSERT STEP
DELETE STEP
COPY
PASTE
CLOSE
SAVE
OPEN DAILY LOG
OPEN DATA VIEW
SYNC
PRINT
TRASH

FIG.5E

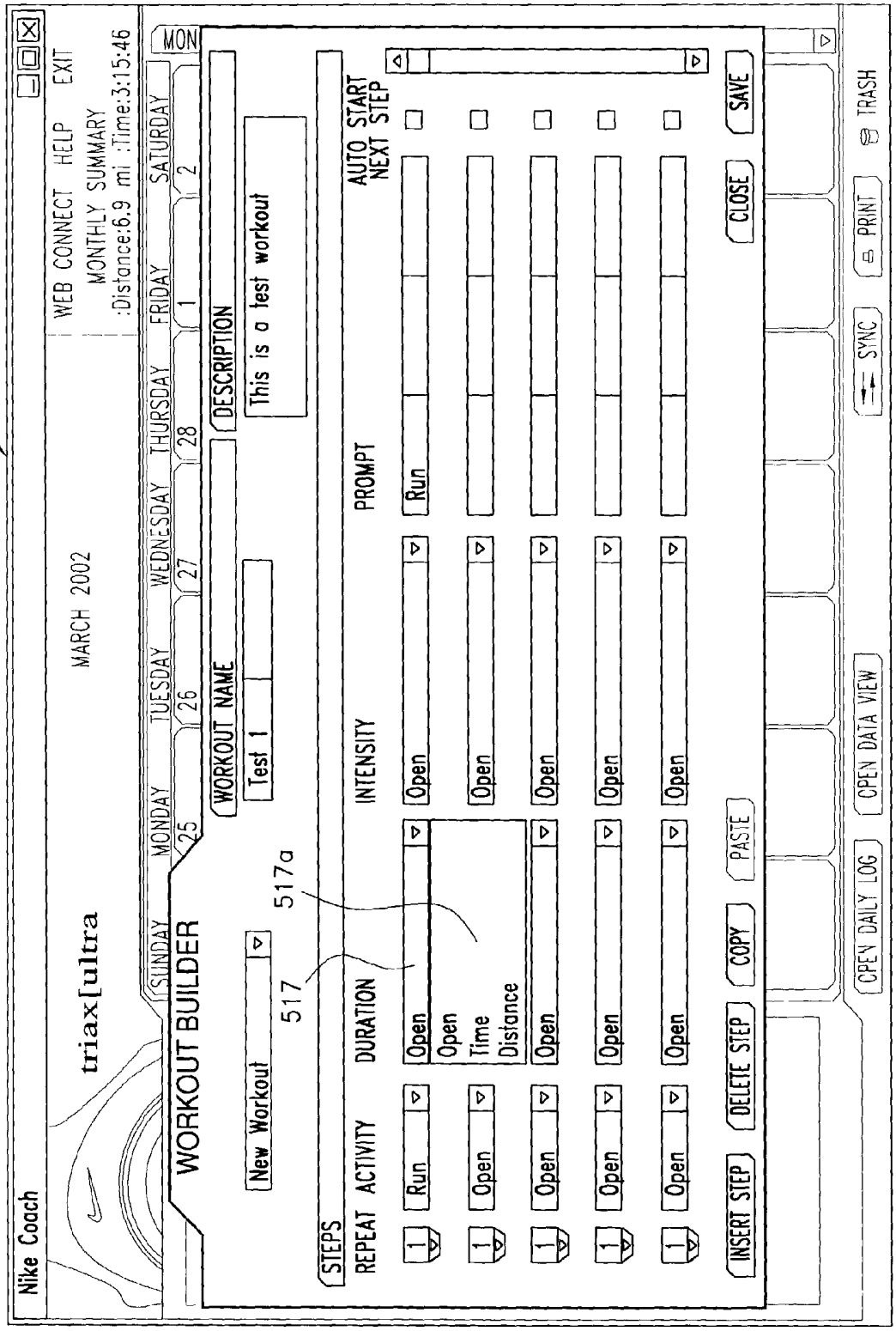

501
Nike Coach
triax[ultra
WEB CONNECT HELP EXIT
MONTHLY SUMMARY
:Distance:6.9 mi :Time:3:15:46
MARCH 2002
WORKOUT BUILDER
SUNDAY MONDAY TUESDAY WEDNESDAY THURSDAY FRIDAY SATURDAY
25 26 27 28 1 2
MON
New Workout
517
517a
WORKOUT NAME
Test 1
DESCRIPTION
This is a test workout
STEPS
REPEAT ACTIVITY DURATION INTENSITY PROMPT AUTO START NEXT STEP
Run Open Run
Open Open Time Distance Open
Open Open Open
Open Open Open
Open Open Open
INSERT STEP
DELETE STEP
COPY
PASTE
CLOSE
SAVE
OPEN DAILY LOG
OPEN DATA VIEW
SYNC
PRINT
TRASH

FIG.5F

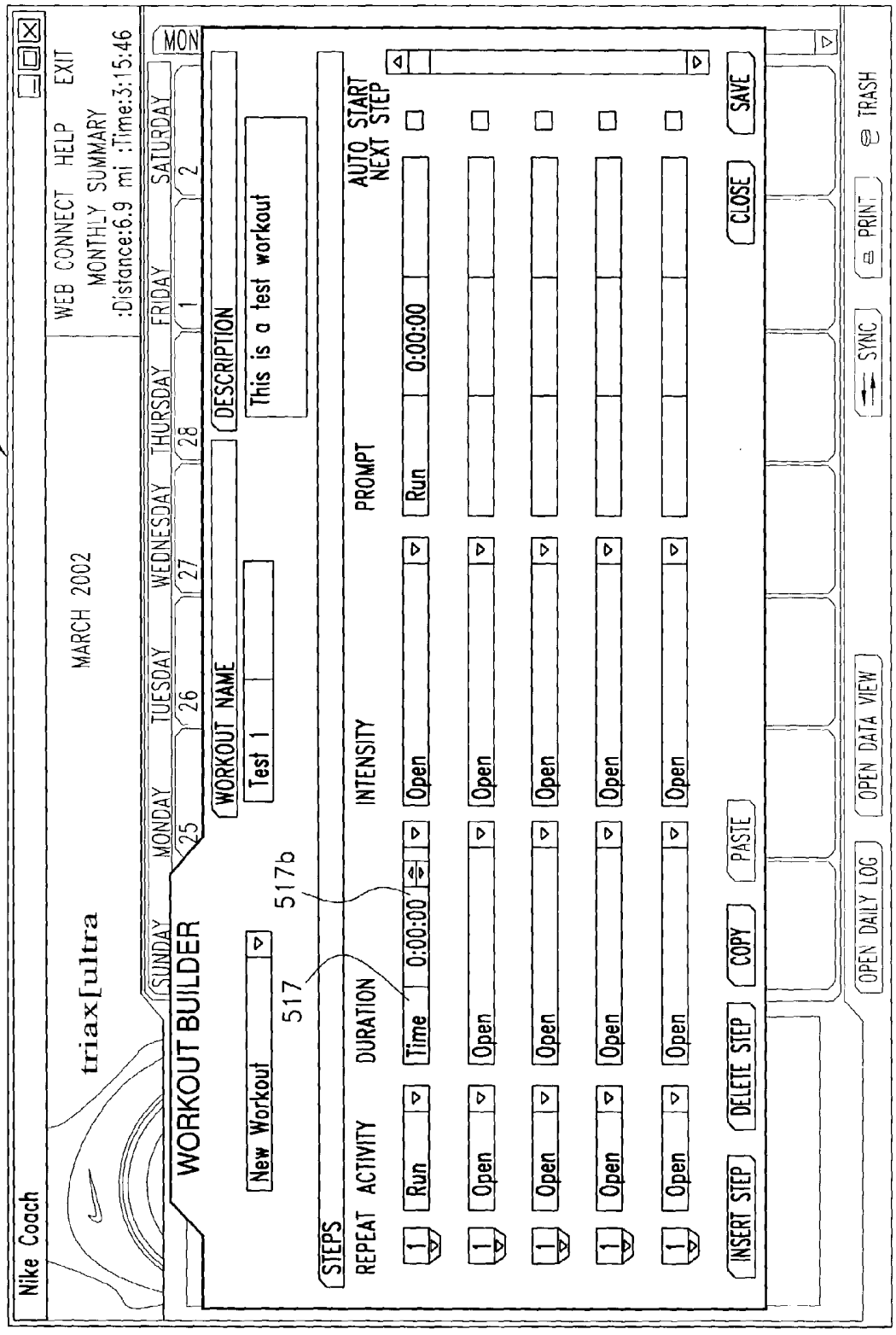

501
Nike Coach
triax[ultra
WEB CONNECT HELP EXIT
MONTHLY SUMMARY
:Distance:6.9 mi :Time:3:15:46
MARCH 2002
SUNDAY MONDAY TUESDAY WEDNESDAY THURSDAY FRIDAY SATURDAY
25 26 27 28 1 2
MON
WORKOUT BUILDER
New Workout
517
517b
WORKOUT NAME
Test 1
DESCRIPTION
This is a test workout
STEPS
REPEAT ACTIVITY DURATION INTENSITY PROMPT AUTO START NEXT STEP
Run Time 0:00:00 Open Run 0:00:00
Open Open Open
Open Open Open
Open Open Open
Open Open Open
INSERT STEP
DELETE STEP
COPY
PASTE
CLOSE
SAVE
OPEN DAILY LOG
OPEN DATA VIEW
SYNC
PRINT
TRASH

FIG.5G

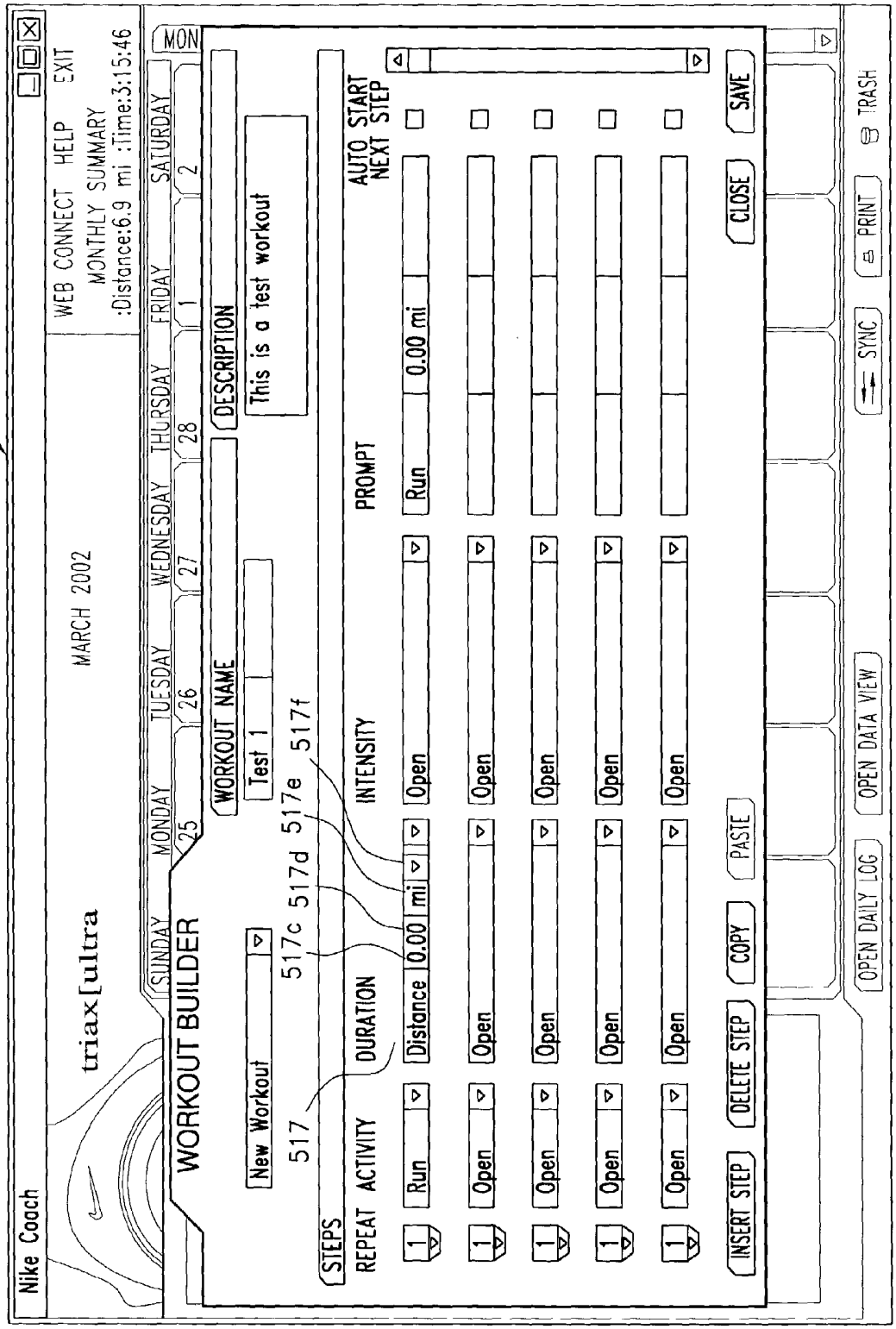

501
Nike Coach
triax[ultra
WEB CONNECT HELP EXIT
MONTHLY SUMMARY
:Distance:6.9 mi :Time:3:15:46
MARCH 2002
SUNDAY MONDAY TUESDAY WEDNESDAY THURSDAY FRIDAY SATURDAY
25 26 27 28 1 2
MON
WORKOUT BUILDER
New Workout
WORKOUT NAME
Test 1
DESCRIPTION
This is a test workout
517
517c 517d 517e 517f
STEPS
REPEAT ACTIVITY DURATION INTENSITY PROMPT AUTO START NEXT STEP
Run Distance 0.00 mi Open Run 0.00 mi
Open Open Open Open Open
Open Open Open Open Open
Open Open Open Open Open
Open Open Open Open Open
INSERT STEP
DELETE STEP
COPY
PASTE
CLOSE
SAVE
OPEN DAILY LOG
OPEN DATA VIEW
SYNC
PRINT
TRASH

FIG.5H

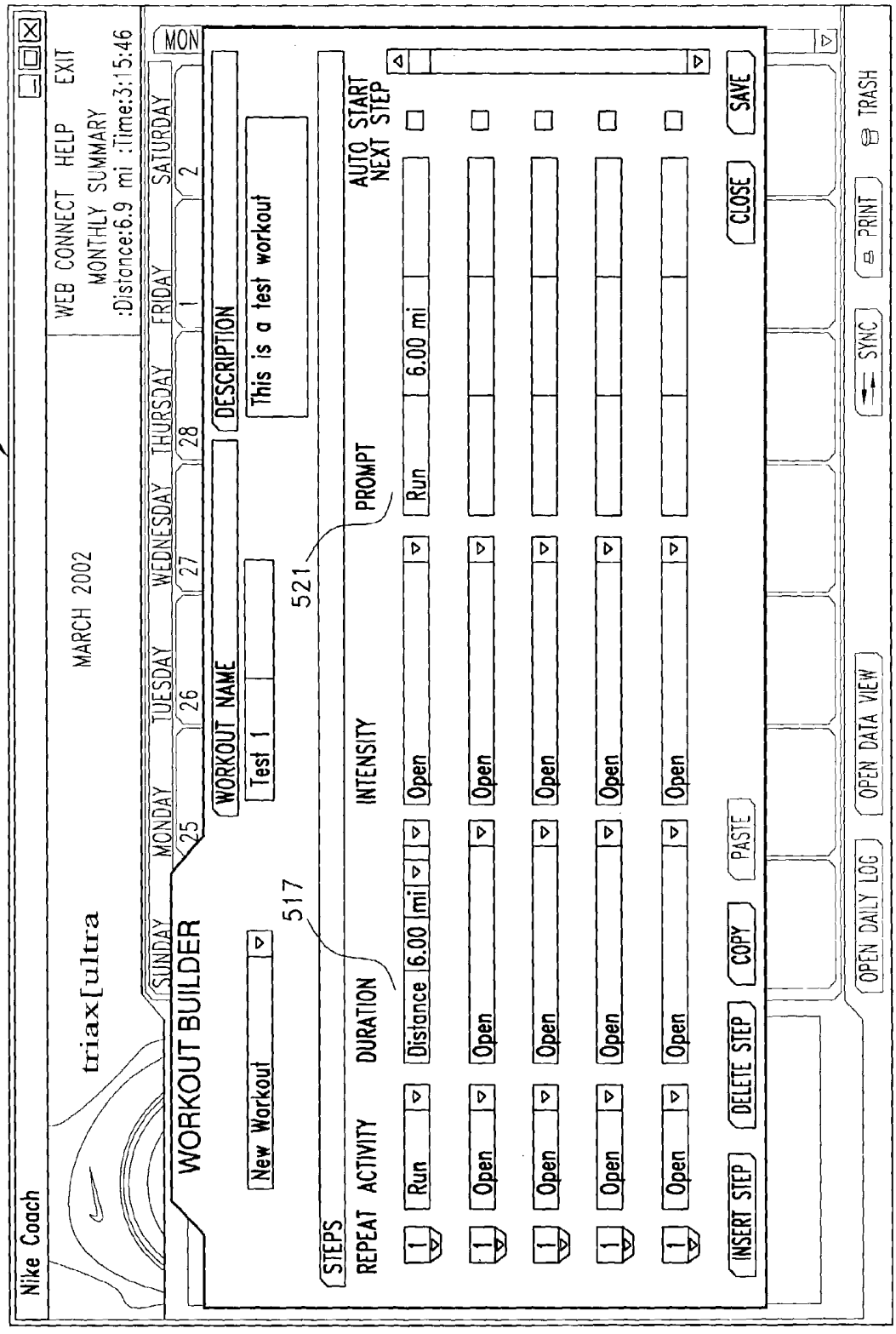

501
Nike Coach
triax[ultra
WEB CONNECT HELP EXIT
MONTHLY SUMMARY
:Distance:6.9 mi :Time:3:15:46
MARCH 2002
SUNDAY MONDAY TUESDAY WEDNESDAY THURSDAY FRIDAY SATURDAY
25 26 27 28 1 2
MON
WORKOUT BUILDER
New Workout
517
WORKOUT NAME
Test 1
DESCRIPTION
This is a test workout
521
PROMPT
AUTO START NEXT STEP
STEPS
REPEAT ACTIVITY DURATION INTENSITY
Run Distance 6.00 mi Open Run 6.00 mi
Open Open
Open Open
Open Open
Open Open
INSERT STEP
DELETE STEP
COPY
PASTE
CLOSE
SAVE
OPEN DAILY LOG
OPEN DATA VIEW
SYNC
PRINT
TRASH

FIG.5I

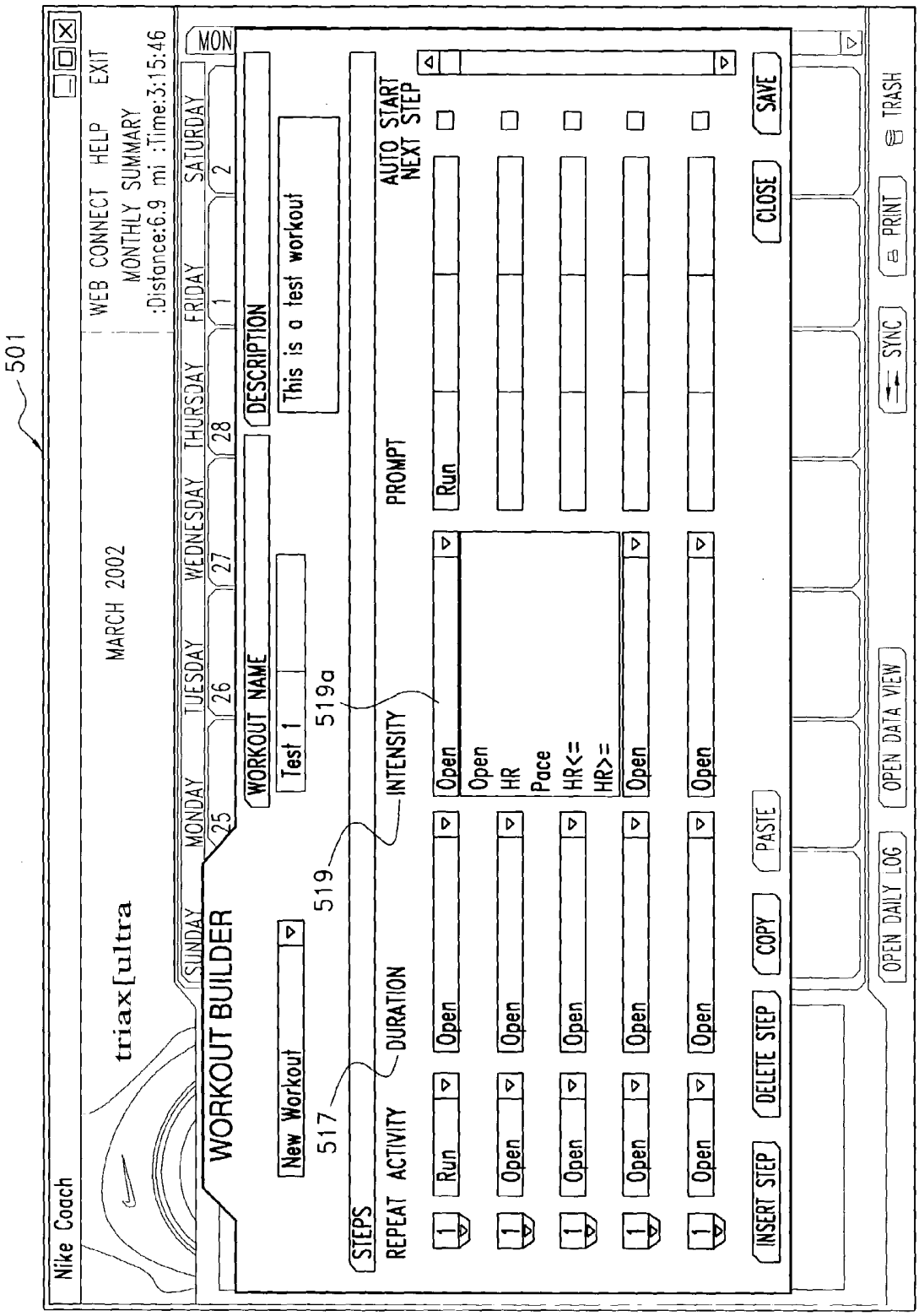

501
Nike Coach
triax[ultra
WEB CONNECT HELP EXIT
MONTHLY SUMMARY
:Distance:6.9 mi :Time:3:15:46
MARCH 2002
SUNDAY MONDAY TUESDAY WEDNESDAY THURSDAY FRIDAY SATURDAY
25 26 27 28 1 2
MON
WORKOUT BUILDER
New Workout
517
519
519a
WORKOUT NAME
Test 1
DESCRIPTION
This is a test workout
AUTO START NEXT STEP
STEPS
REPEAT ACTIVITY
DURATION
INTENSITY
PROMPT
Run
Open
Open
HR
Pace
HR<=
HR>=
INSERT STEP
DELETE STEP
COPY
PASTE
CLOSE
SAVE
OPEN DAILY LOG
OPEN DATA VIEW
SYNC
PRINT
TRASH

FIG.5J

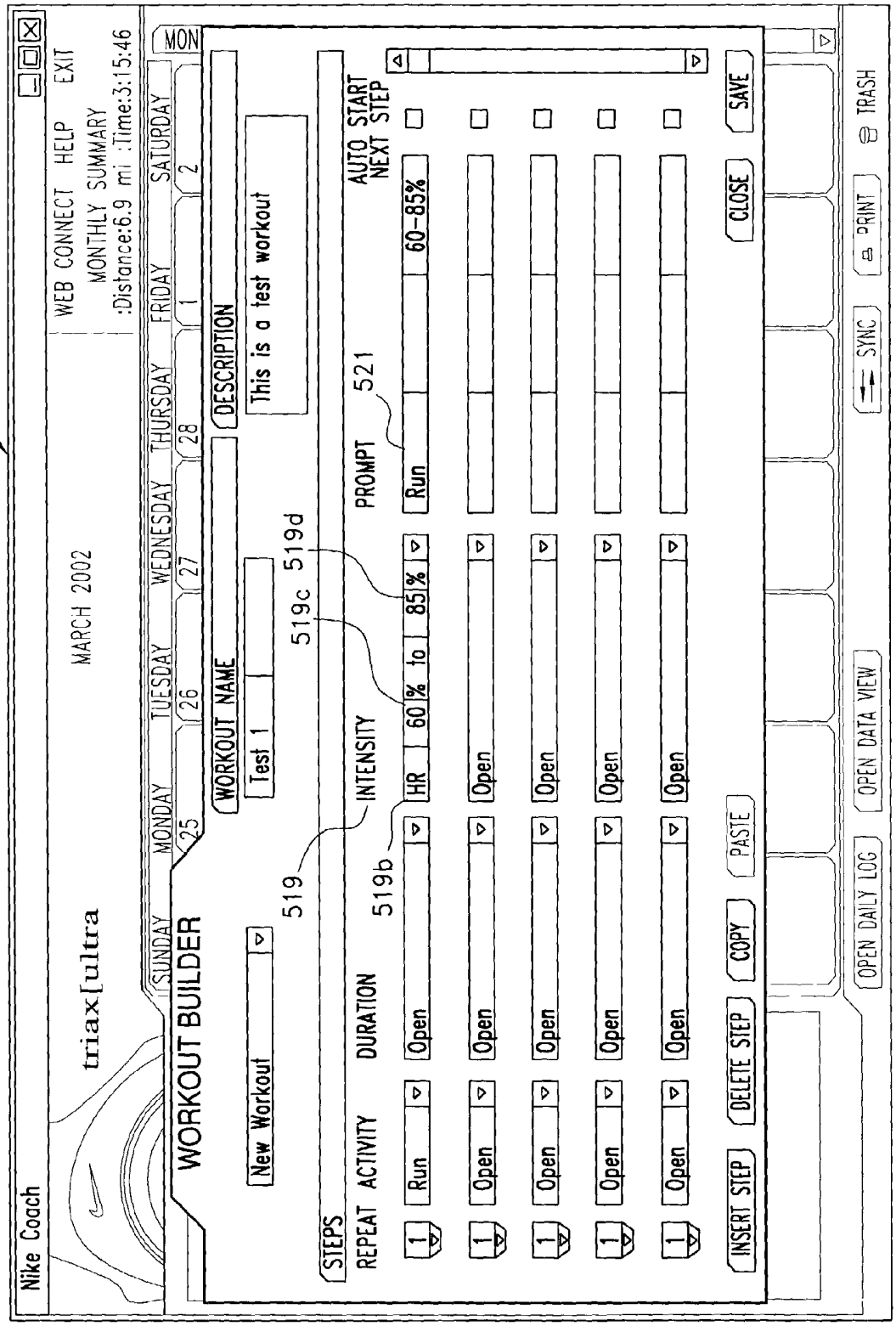

501
Nike Coach
WEB CONNECT HELP EXIT
MONTHLY SUMMARY
:Distance:6.9 mi :Time:3:15:46
triax[ultra
MARCH 2002
SUNDAY MONDAY TUESDAY WEDNESDAY THURSDAY FRIDAY SATURDAY
25 26 27 28 1 2
MON
WORKOUT BUILDER
New Workout
WORKOUT NAME
Test 1
DESCRIPTION
This is a test workout
519
519b
519c
519d
INTENSITY
PROMPT
521
AUTO START NEXT STEP
STEPS
REPEAT ACTIVITY DURATION
HR 60% to 85%
Run
60-85%
Open
INSERT STEP
DELETE STEP
COPY
PASTE
CLOSE
SAVE
OPEN DAILY LOG
OPEN DATA VIEW
SYNC
PRINT
TRASH

FIG.5K

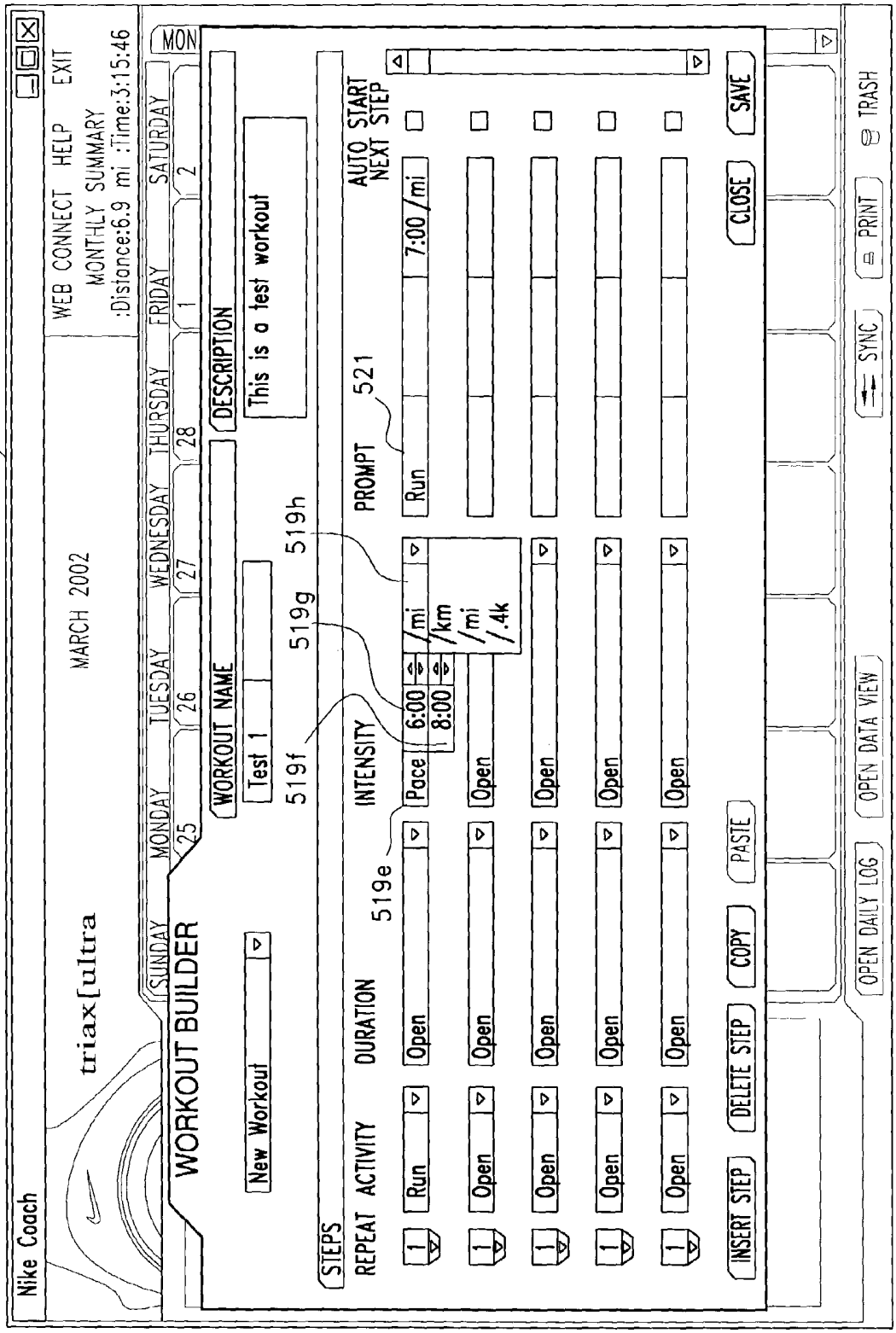

501
Nike Coach
triax{ultra
WEB CONNECT HELP EXIT
MONTHLY SUMMARY
:Distance:6.9 mi :Time:3:15:46
MARCH 2002
WORKOUT BUILDER
SUNDAY MONDAY TUESDAY WEDNESDAY THURSDAY FRIDAY SATURDAY
25 26 27 28 1 2
MON
New Workout
WORKOUT NAME
Test 1
DESCRIPTION
This is a test workout
519f
519g
519h
STEPS
REPEAT ACTIVITY DURATION
519e
INTENSITY
PROMPT
521
AUTO START
NEXT STEP
Run Open Pace 6:00 8:00 /mi /km /mi /.4k Run 7:00 /mi
INSERT STEP
DELETE STEP
COPY
PASTE
CLOSE
SAVE
OPEN DAILY LOG
OPEN DATA VIEW
SYNC
PRINT
TRASH

FIG.5L

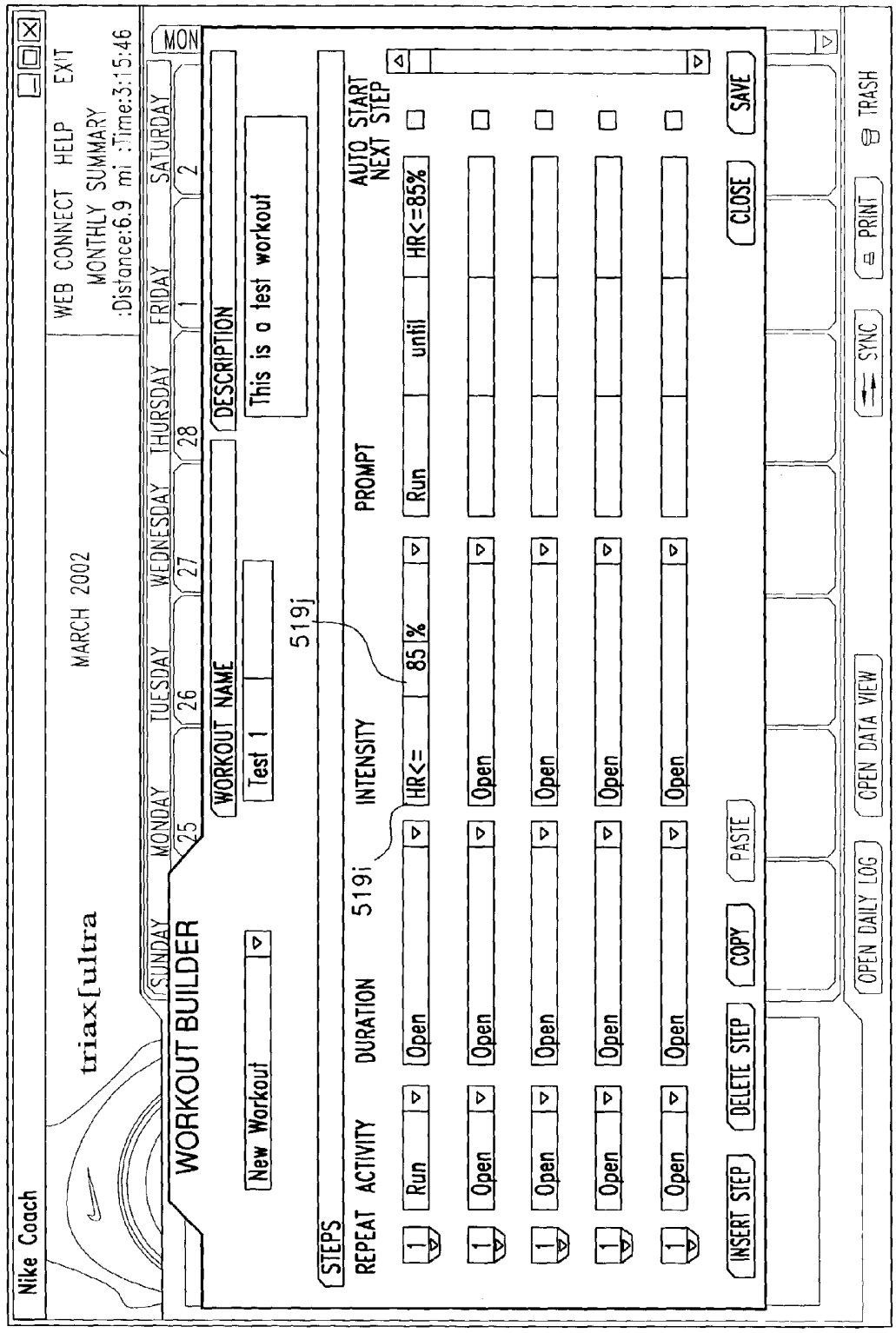

501
Nike Coach
triax[ultra
WEB CONNECT HELP EXIT
MONTHLY SUMMARY
:Distance:6.9 mi :Time:3:15:46
MARCH 2002
SUNDAY MONDAY TUESDAY WEDNESDAY THURSDAY FRIDAY SATURDAY
25 26 27 28 1 2
MON
WORKOUT BUILDER
New Workout
WORKOUT NAME
Test 1
519j
DESCRIPTION
This is a test workout
STEPS
519i
REPEAT ACTIVITY DURATION INTENSITY PROMPT AUTO START NEXT STEP
HR<= 85 % Run until HR<=85%
Open
INSERT STEP
DELETE STEP
COPY
PASTE
CLOSE
SAVE
OPEN DAILY LOG
OPEN DATA VIEW
SYNC
PRINT
TRASH

FIG.5M

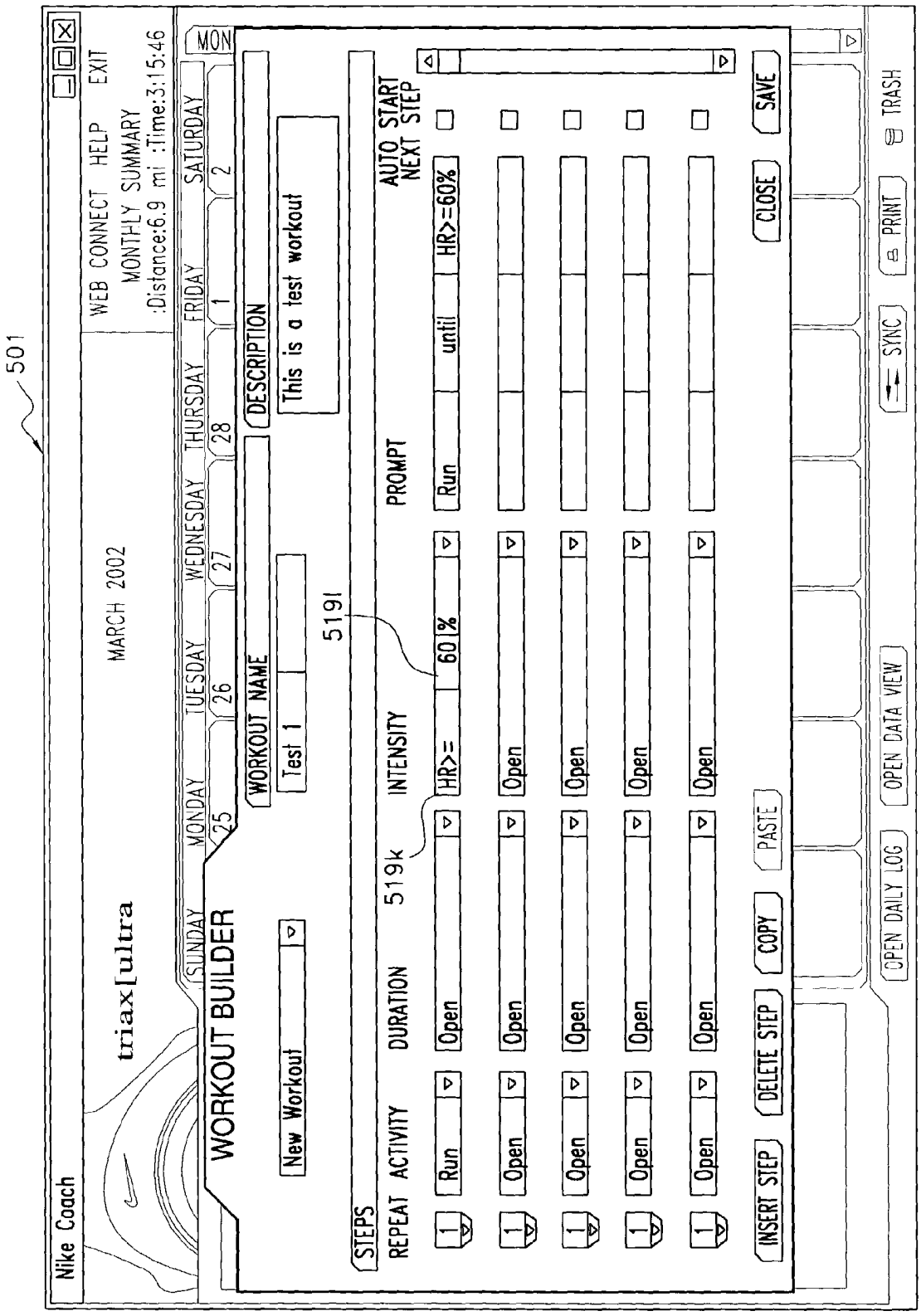

501
Nike Coach
triax[ultra
WEB CONNECT HELP EXIT
MONTHLY SUMMARY
:Distance:6.9 mi :Time:3:15:46
MARCH 2002
SUNDAY MONDAY TUESDAY WEDNESDAY THURSDAY FRIDAY SATURDAY
25 26 27 28 1 2
WORKOUT BUILDER
New Workout
WORKOUT NAME
Test 1
DESCRIPTION
This is a test workout
5191
STEPS
REPEAT ACTIVITY DURATION 519k INTENSITY PROMPT AUTO START NEXT STEP
1 Run Open HR>= 60% Run until HR>=60%
1 Open Open Open
1 Open Open Open
1 Open Open Open
1 Open Open Open
INSERT STEP
DELETE STEP
COPY
PASTE
CLOSE
SAVE
OPEN DAILY LOG
OPEN DATA VIEW
SYNC
PRINT
TRASH

FIG.5N

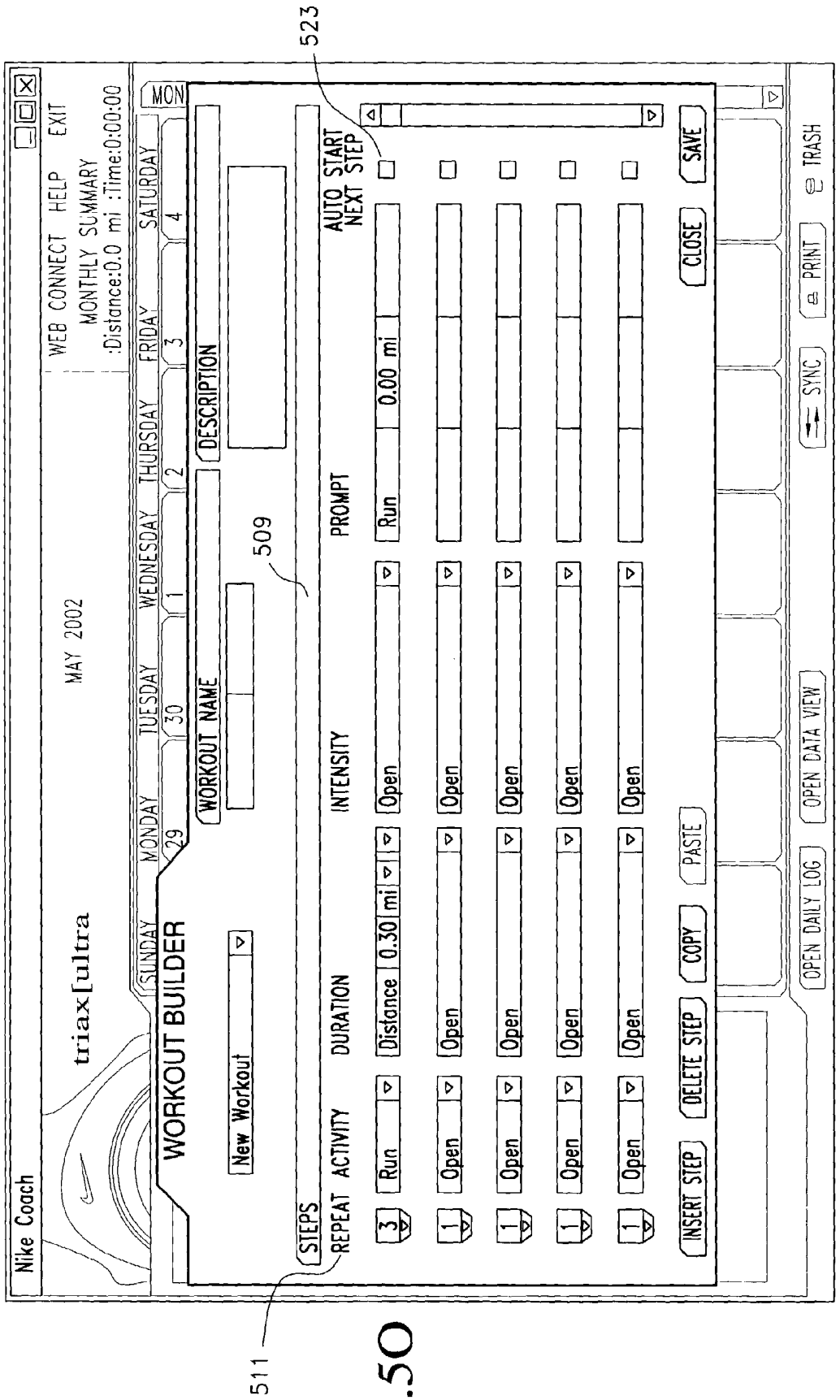

523
511
509
Nike Coach
triax[ultra
WEB CONNECT HELP EXIT
MONTHLY SUMMARY
:Distance:0.0 mi :Time:0:00:00
MAY 2002
SUNDAY MONDAY TUESDAY WEDNESDAY THURSDAY FRIDAY SATURDAY
29 30 1 2 3 4
MON
WORKOUT BUILDER
New Workout
WORKOUT NAME
DESCRIPTION
STEPS
REPEAT ACTIVITY DURATION INTENSITY PROMPT
AUTO START NEXT STEP
3 Run Distance 0.30 mi Open Run 0.00 mi
1 Open Open Open Open Open
1 Open Open Open Open Open
1 Open Open Open Open Open
1 Open Open Open Open Open
INSERT STEP
DELETE STEP
COPY
PASTE
CLOSE
SAVE
OPEN DAILY LOG
OPEN DATA VIEW
SYNC
PRINT
TRASH

FIG.5O

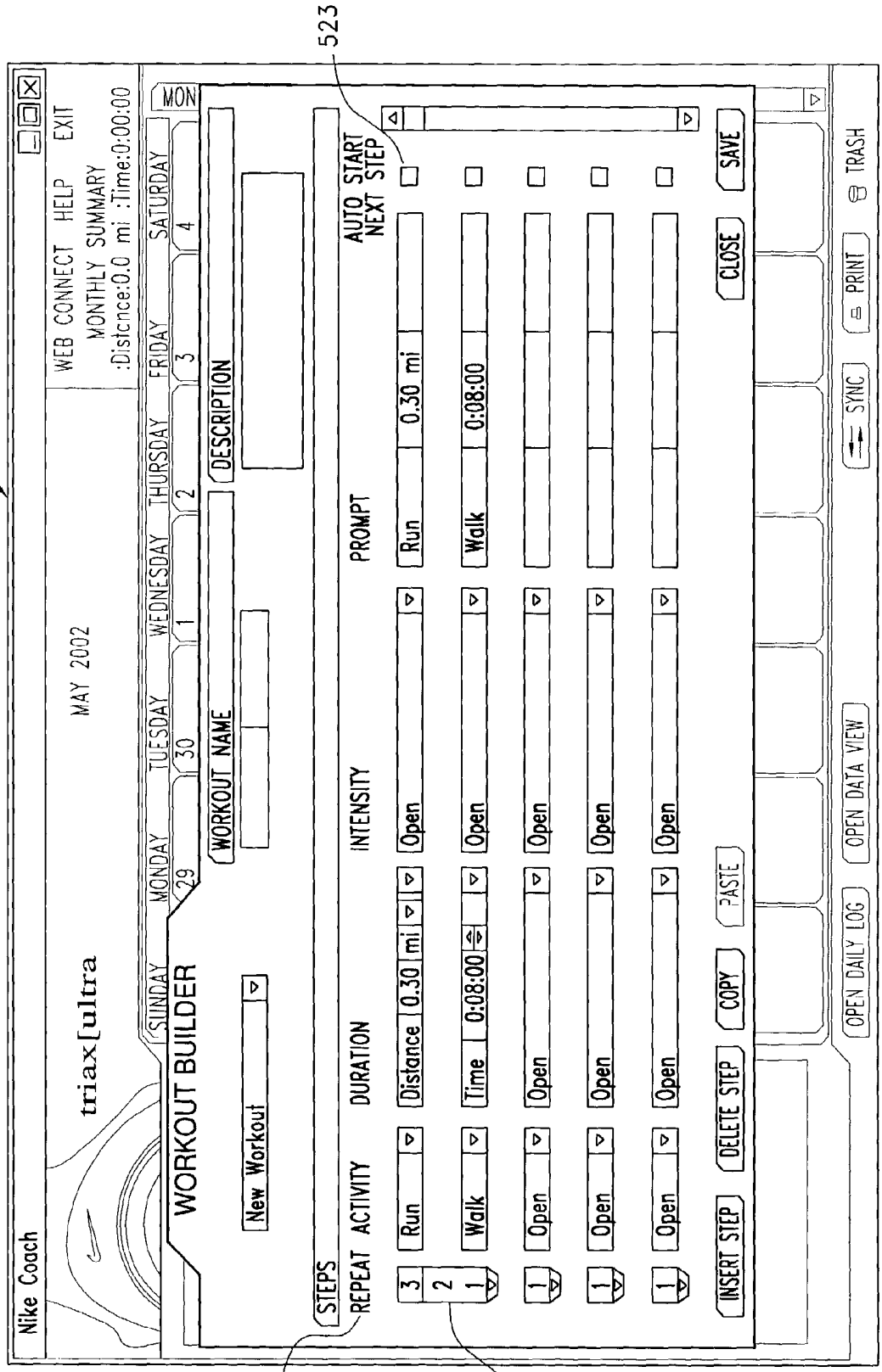

501
523
511
511a
Nike Coach
triax[ultra
WEB CONNECT HELP EXIT
MONTHLY SUMMARY
:Distance:0.0 mi :Time:0:00:00
MAY 2002
SUNDAY MONDAY TUESDAY WEDNESDAY THURSDAY FRIDAY SATURDAY
29 30 1 2 3 4
WORKOUT BUILDER
New Workout
WORKOUT NAME
DESCRIPTION
STEPS
REPEAT ACTIVITY DURATION INTENSITY PROMPT AUTO START NEXT STEP
3 Run Distance 0.30 mi Open Run 0.30 mi
2 Walk Time 0:08:00 Open Walk 0:08:00
1 Open Open
1 Open Open
1 Open Open
1 Open Open
INSERT STEP
DELETE STEP
COPY
PASTE
CLOSE
SAVE
OPEN DAILY LOG
OPEN DATA VIEW
SYNC
PRINT
TRASH

FIG.5P

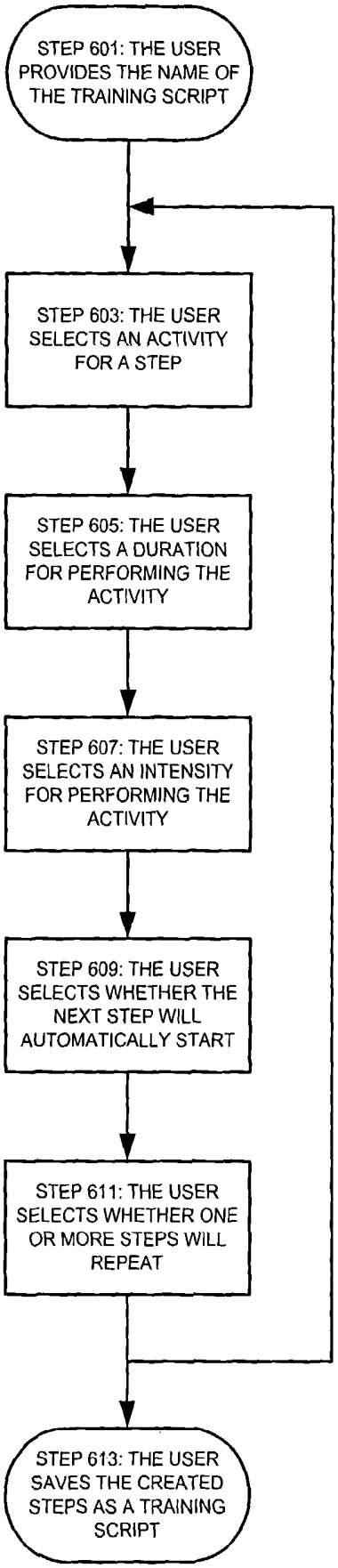

STEP 601: THE USER PROVIDES THE NAME OF THE TRAINING SCRIPT
STEP 603: THE USER SELECTS AN ACTIVITY FOR A STEP
STEP 605: THE USER SELECTS A DURATION FOR PERFORMING THE ACTIVITY
STEP 607: THE USER SELECTS AN INTENSITY FOR PERFORMING THE ACTIVITY
STEP 609: THE USER SELECTS WHETHER THE NEXT STEP WILL AUTOMATICALLY START
STEP 611: THE USER SELECTS WHETHER ONE OR MORE STEPS WILL REPEAT
STEP 613: THE USER SAVES THE CREATED STEPS AS A TRAINING SCRIPT

FIGURE 6

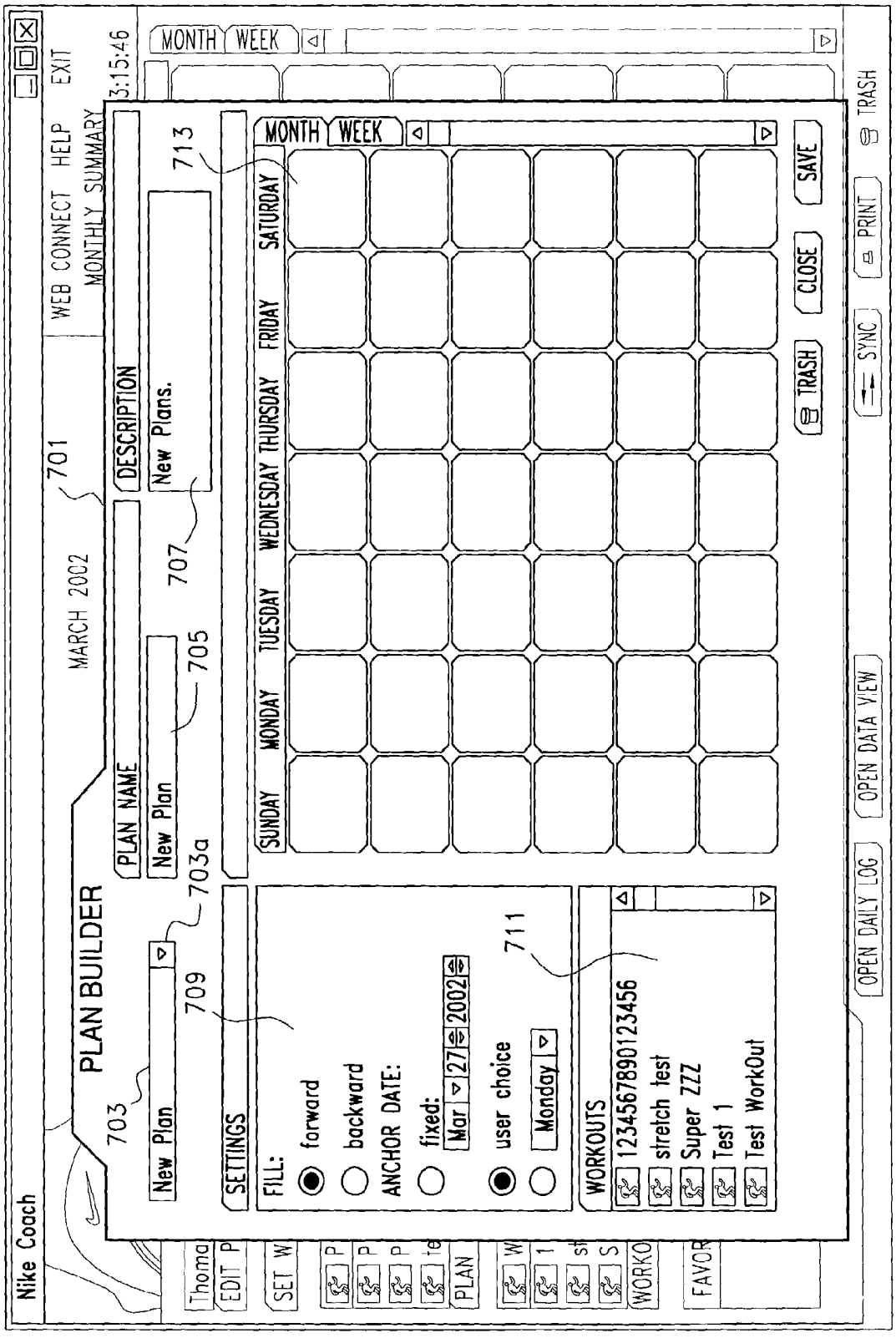

Nike Coach
PLAN BUILDER
MARCH 2002
701
WEB CONNECT HELP EXIT
MONTHLY SUMMARY
3:15:46
MONTH WEEK
703
New Plan
709
703a
PLAN NAME
New Plan
705
DESCRIPTION
New Plans.
707
713
SETTINGS
FILL:
forward
backward
ANCHOR DATE:
fixed:
Mar 27 2002
user choice
Monday
711
SUNDAY MONDAY TUESDAY WEDNESDAY THURSDAY FRIDAY SATURDAY
WORKOUTS
1234567890123456
stretch test
Super ZZZ
Test 1
Test WorkOut
TRASH
CLOSE
SAVE
SYNC
PRINT
TRASH
OPEN DAILY LOG
OPEN DATA VIEW

FIG.7A

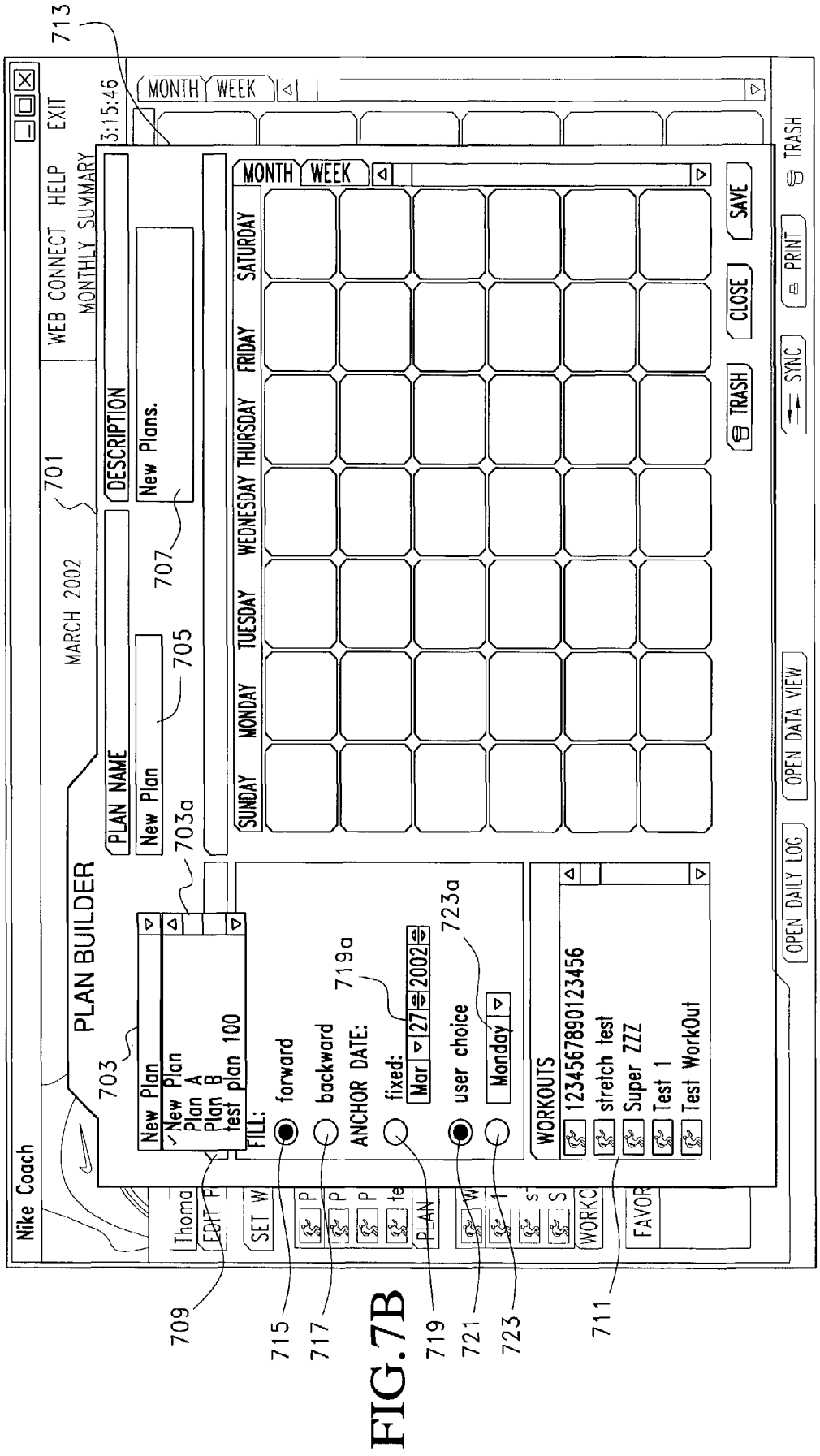

713
701
703
703a
705
707
709
711
715
717
719
719a
721
723
723a
Nike Coach
WEB CONNECT HELP EXIT
MONTHLY SUMMARY
MARCH 2002
PLAN BUILDER
PLAN NAME
New Plan
DESCRIPTION
New Plans.
MONTH WEEK
SUNDAY MONDAY TUESDAY WEDNESDAY THURSDAY FRIDAY SATURDAY
SAVE
CLOSE
TRASH
SYNC
PRINT
TRASH
OPEN DAILY LOG
OPEN DATA VIEW
New Plan
Plan A
Plan B
test plan 100
FILL:
forward
backward
ANCHOR DATE:
fixed:
Mar 27 2002
user choice
Monday
WORKOUTS
1234567890123456
stretch test
Super ZZZ
Test 1
Test WorkOut

FIG. 7B

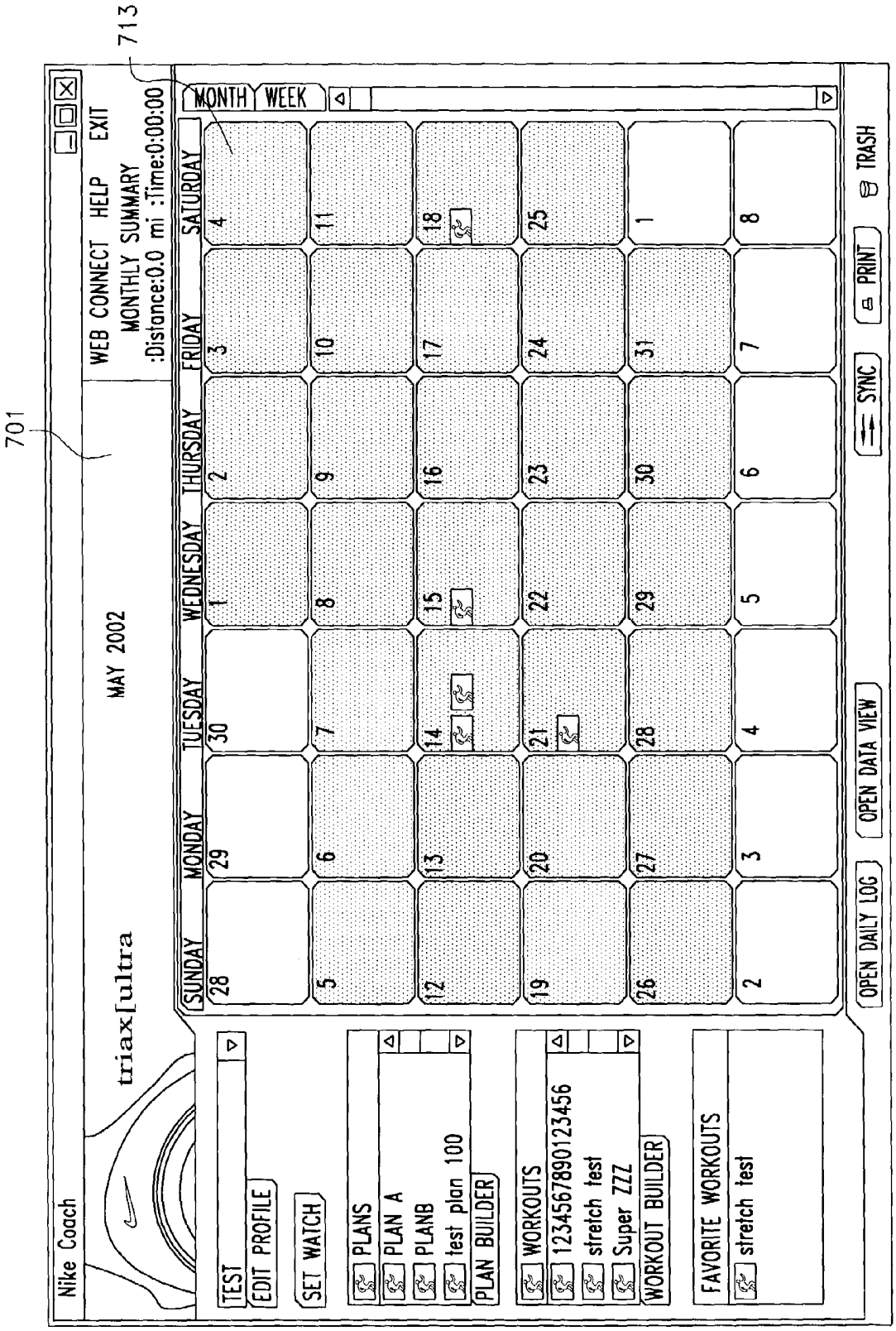

701
713
Nike Coach
triax[ultra
MAY 2002
WEB CONNECT HELP EXIT
MONTHLY SUMMARY
:Distance:0.0 mi :Time:0:00:00
MONTH WEEK
SUNDAY MONDAY TUESDAY WEDNESDAY THURSDAY FRIDAY SATURDAY
TEST
EDIT PROFILE
SET WATCH
PLANS
PLAN A
PLANB
test plan 100
PLAN BUILDER
WORKOUTS
12345678901234567
stretch test
Super ZZZ
WORKOUT BUILDER
FAVORITE WORKOUTS
stretch test
OPEN DAILY LOG
OPEN DATA VIEW
SYNC
PRINT
TRASH

FIG. 7C

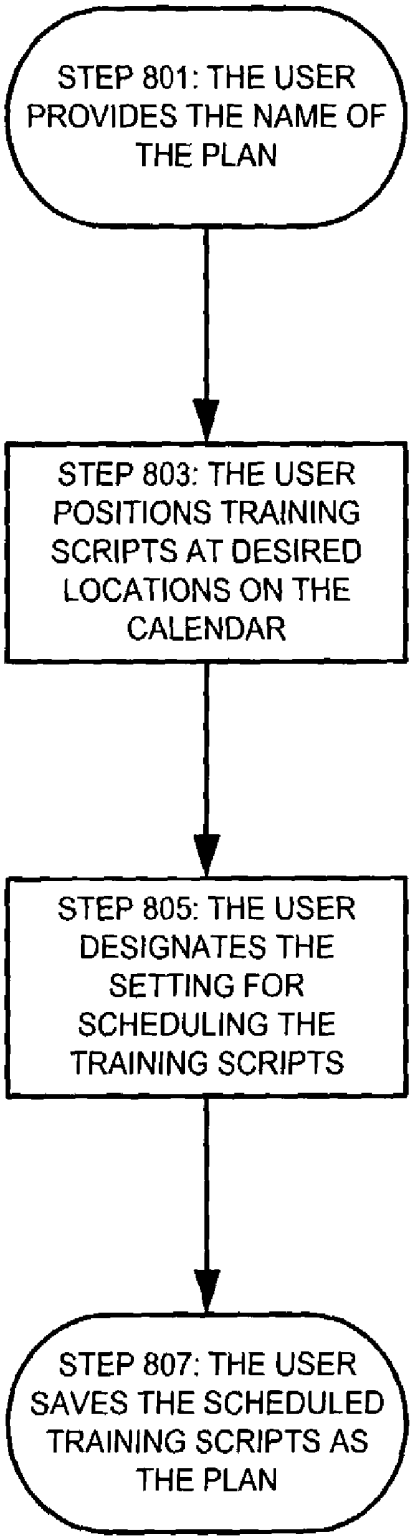

STEP 801: THE USER PROVIDES THE NAME OF THE PLAN
STEP 803: THE USER POSITIONS TRAINING SCRIPTS AT DESIRED LOCATIONS ON THE CALENDAR
STEP 805: THE USER DESIGNATES THE SETTING FOR SCHEDULING THE TRAINING SCRIPTS
STEP 807: THE USER SAVES THE SCHEDULED TRAINING SCRIPTS AS THE PLAN

FIGURE 8

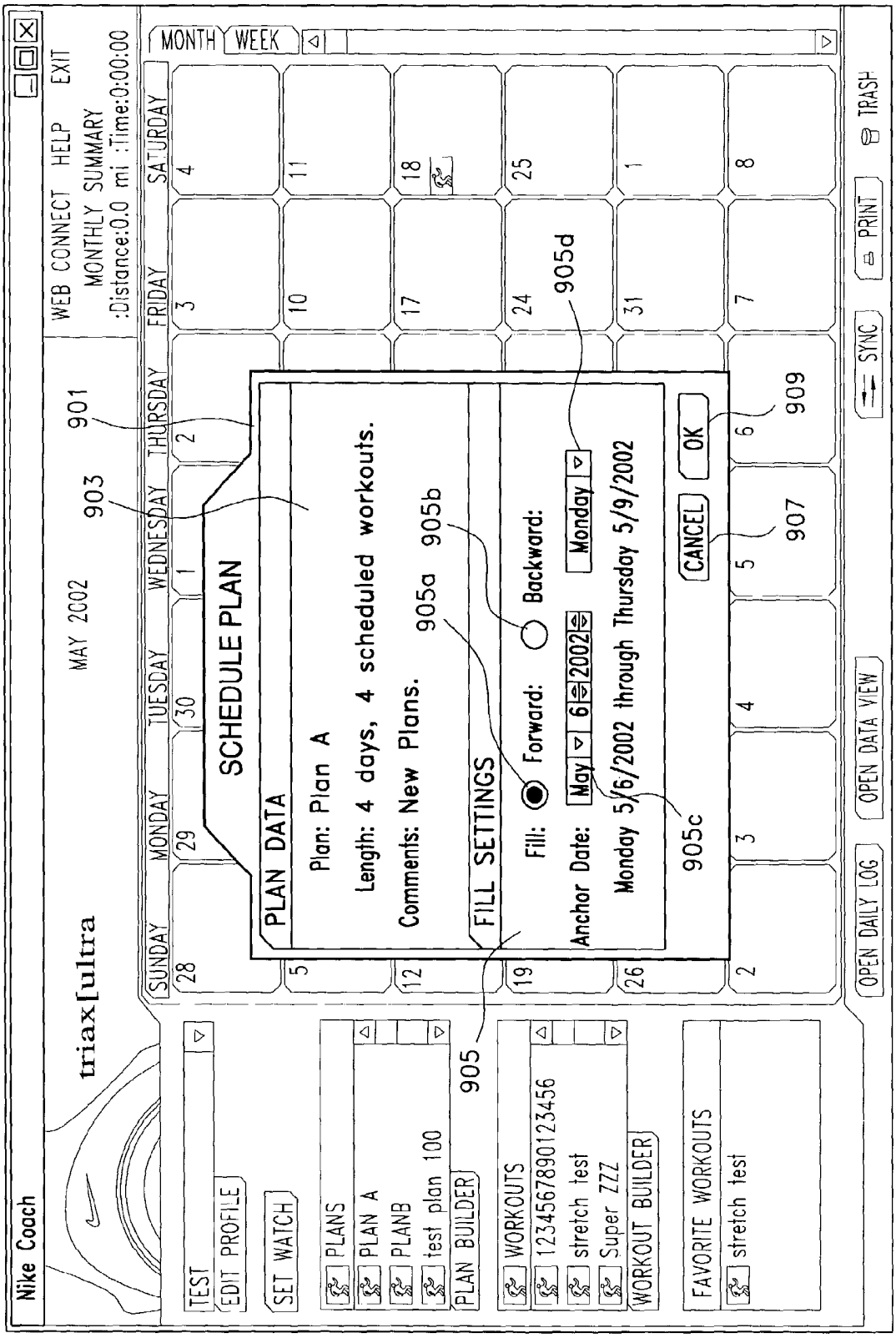

Nike Coach
triax[ultra
MAY 2002
903
901
WEB CONNECT HELP EXIT
MONTHLY SUMMARY
:Distance:0.0 mi :Time:0:00:00
MONTH WEEK
SUNDAY MONDAY TUESDAY WEDNESDAY THURSDAY FRIDAY SATURDAY
SCHEDULE PLAN
PLAN DATA
Plan: Plan A
Length: 4 days, 4 scheduled workouts.
Comments: New Plans.
905a 905b
FILL SETTINGS
Fill: Forward: Backward:
Anchor Date: May 6 2002 Monday
Monday 5/6/2002 through Thursday 5/9/2002
905c
905d
CANCEL OK
907
909
905
TEST
EDIT PROFILE
SET WATCH
PLANS
PLAN A
PLANB
test plan 100
PLAN BUILDER
WORKOUTS
12345678901234567890
stretch test
Super ZZZ
WORKOUT BUILDER
FAVORITE WORKOUTS
stretch test
OPEN DAILY LOG
OPEN DATA VIEW
SYNC
PRINT
TRASH

FIG.9

TRAINING SCRIPTS

RELATED APPLICATIONS

This application is a continuation of U.S. Provisional Patent Application No. 60/386,210, filed on May 30, 2002, entitled "Training Scripts" and naming Albert Shum as inventor, which provisional patent application is incorporated entirely herein by reference.

FIELD OF THE INVENTION

The invention relates to a workout script for providing a user with workout instructions based upon characteristics of the user during the workout, or upon characteristics of the workout itself. For example, a workout script may instruct a user to run until the user's heart rate reaches 80 beats per minute, and then subsequently instruct the user to stretch for a cooling-off period of ten minutes. Alternately, a script may instruct a user to run for a predetermined distance or for a predetermined period of time, and then instruct the user to take another action after the distance has been run or the period of time has expired. Still further, the invention relates to the creation and use of such workout scripts.

BACKGROUND OF THE INVENTION

There has been a steadily growing interest in fitness, both for health reasons and for personal development. As the popularity of various physical fitness activities has grown, people have become more interested in achieving specific goals through these activities. For example, some people take up exercise to lose weight, others to participate in a particular type of sport, such as soccer or marathon racing, and still others just to gradually improve their overall physical condition. Correspondingly, a great deal of scientific research has been conducted as to how people may reach these specific goals. For example, some scientific research has indicated that the fastest way for someone to lose fat through exercise is to exercise such that the person's heart rate is maintained within a specific range or "zone" of beats per minute.

This research should ideally allow people of all walks of life to maximize the results obtained from their fitness activities. In practice, however, few people can take advantage of this research. While an athlete may create a schedule of fitness activities or training routine designed to obtain specific results through one or more physical activities, he or she will probably have difficulty following that training routine while actually engaged in those physical activities.

For example, an optimized group of physical activities or "workout" may call for an athlete to run until his or her heart rate is within a desired heart rate zone (that is, a percentage range of his or her maximum heart rate), and then switch to another, less strenuous activity, such as jogging or stretching, after ten minutes. While running, however, that athlete cannot easily determine when his or her heart rate reaches the targeted zone. Even if he or she employs a heart rate monitor to measure his or her heart rate, the athlete must continuously watch the heart rate monitor to ascertain when his or her heart rate reaches the desired zone. The athlete must then initiate a timer to measure how long his or her heart rate remains within the desired zone.

This module requires significant concentration that detracts from the workout itself. Thus, users will commonly not adhere to a training routine, or, alternatively, will not prepare a detailed training routine that maximizes the results of their workout. Accordingly, there is a need for a method and apparatus that will allow a person to create a training routine scheduling each part or step of a workout, determine when the requirements of a particular step have been fulfilled, and then prompt the user to begin the subsequent step of the workout.

BRIEF SUMMARY OF THE INVENTION

Advantageously, the invention allows a user to create a training script for a workout. That is, the invention allows a user to create a set of instructions that defines a series of activities to be performed during a workout, and a quantity associated with at least one of the activities. When executed, the instructions prompt a device to sequentially display each activity until the athlete has performed the defined quantity associated with that activity, and then to display the next activity. The device may further allow a user to electronically share created training scripts with others.

Still further, the invention may include a device that displays a physical activity listed in an electronic training script to a user. The device then detects at least one characteristic of the user's workout associated with a quantity defined in the training script for that physical activity. When the device detects that the workout characteristic matches the defined quantity, the device then displays the next activity subsequently listed in the electronic training script. Thus, the invention provides a way for a user to design a precise training routine, and then to be timely prompted to follow the training routine. Further, the invention allows a user to share a successful training routine with others. These and other features of the invention will become apparent based upon the following description of the invention with reference to associated drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** shows a generic computing device that can be used for creating a training script or for implementing a training script according to an embodiment of the invention.

FIG. **2** shows a schematic diagram of a device for creating a training script and a device for implementing a training script according to an embodiment of the invention.

FIGS. **3**, **4**A, **4**B, **5**A-**5**P, **7**A-**7**C and **9** show various user interfaces according to an embodiment of the invention.

FIG. **6** illustrates a flow chart for creating a training script.

FIG. **8** illustrates a flow chart for using an interface according to an embodiment of the invention to create a plan of one or more training scripts.

DETAILED DESCRIPTION OF THE INVENTION

Overview

The invention allows a user to create a training script for a workout. A training script is a group of one or more training steps corresponding to different portions of a workout. Each training step includes instructions to be executed by a computing device. These instructions define an action, such as a physical activity to be performed during a workout, and a quantity associated with that action. When executed by a computing device, the instructions command the computing device to display a prompt for the user to perform the action, until the device receives performance data indicating that the user has performed the quantity designated for the action. The device then executes the next sequential training step. Using these instructions, the device will sequentially display a

prompt for the user to perform each action in a workout, until the user performs the designated quantity for each of the actions.

According to various embodiments of the invention, the quantity for performing an action can be the duration of the action itself. For example, the duration may be the time period for which the action is to be performed. Alternately, the duration may be a distance to be traversed by performing the action. A training step may thus call for an athlete to run for the duration of five miles. Still further, the duration may be the number of times that an action should be repeated, or an amount of work exerted while performing the action. A training step could, for example, call for an athlete to repeat a weight-lifting exercise 20 times, or jog until the athlete has burned 600 calories.

A step may also specify a quantity for performing an action that is based upon an intensity associated with that action. The intensity of an action may be defined by any desired unit, such as the heart rate experienced by the user while performing the action. The intensity may also be, for example, a pace at which the action is performed, or an amount of force created while performing the action. Still further, a step may include a quantity specifying both an intensity and a duration. Thus, a step may call for a biker to bike at a force of 200 dynes for 35 minutes. Of course, still other units of measurement can be used to define a quantity for performing an action, such as a user's blood oxygen level or blood pressure level.

General Computing Device

Various embodiments of the invention may conveniently be implemented on a general-purpose computing device, such as a desktop personal computer, a laptop computer, or a personal digital assistant (PDA), or on a special-purpose computing device, such as a digital wristwatch. Referring now to FIG. **1**, this figure illustrates an exemplary general-purpose computer device that can be used to implement various aspects of the invention. In FIG. **1**, the computer device **101** has a computer **103** that includes a processor **105**, such as a programmable microprocessor, and a system memory **107** coupled to the processor **105**. The system memory **107** may be implemented using any appropriate memory devices, such as one or more microcircuit devices. The system memory **107** will typically include both a read only memory (ROM) **109** and a random access memory (RAM) **111**. The ROM **109** and RAM **111** may be connected to the processor **105** using a conventional bus structure (not shown), such as a memory bus or memory controller, a peripheral bus, and a local bus using any of a variety of bus architectures.

The computer device **101** will also include one or more input devices **113**. For example, if the computer device **101** is a conventional desktop computer or laptop computer, it may include a keyboard **113***a*, and a pointing device **113***b*, such as a mouse or touchpad. Further, the computer device **101** may include additional or alternate input devices **113**, such as a microphone, a pointing stick, or a digitizer for accepting input through a stylus. If the computer device **101** is a special-purpose computing device, such as a digital wristwatch, it may instead only have input devices suited for its particular purpose.

For example, rather than a large keyboard **113***a* or pointing device **113***b*, if the computer device **101** is a wristwatch it may instead include a button interface **113***c* having a small number of depressable buttons. It may also have one or more sensors **113***d* for measuring characteristics of the device's environment. Thus, the sensors **113***d* may include a heart rate monitor for measuring the heart rate of a person using the computer device **101**, an accelerometer or pedometer for measuring the travel of a person using the computer device **101**, a thermometer, an altimeter, a compass, a blood oxygen monitor for monitoring the blood oxygen content of a person using the computer device **101**, or other measurement device. A sensor **113***d* may be included in the same casing as the computing device **103**, or the sensor **113***d* may be remotely locating and transmit measured data to the computing device **103** using a wired or wireless medium.

The computer device **101** will also include one or more output devices **115**, such as a display screen **115***a*, a printer **115***b*, and speakers **115***c*. For example, if the computer device **101** is a conventional desktop computer, then the display screen **115***a* may be a large CRT or flat panel monitor. Alternately, if the computer device **101** is a special-purpose computing device, it may only have the output devices **115** suited for its particular purpose. For example, if the computer device **101** is a digital wristwatch, display screen **115***a* may be a small LCD display, and the computer device **101** may have only one small speaker **115***b* and omit the printer **115***c* altogether. Of course, the computer device **101** may also include additional or alternate output devices **115** as desired.

Depending upon its configuration, the computer device **101** may also include one or more peripheral data storage devices **117**. The computer device **101** may have, for example, a magnetic disk drive **117***a* for reading from and writing to a magnetic disk (such as a hard disk drive or a floppy disk drive), and an optical disk drive **117***b* for reading from or writing to a removable optical disk (such as a CD ROM or other optical media). Of course, the computer device **101** may also include other types of data storage devices **117**, such as magnetic cassettes, flash memory cards, digital video disks, Bernoulli cartridges. Also, if the computer device **101** is a digital wristwatch, then the computer device **101** may include a small peripheral data storage device **117**, such as a Memory Stick or a Secure Digital card.

As will be appreciated by those of ordinary skill in the art, the computer device **101** executes instructions stored in the system memory **107**. These instructions may be retrieved to the system memory **107** from one or more of the peripheral storage devices. In addition, the computer device **101** may receive input data for executing the instructions from a user through the input devices **113**. Similarly, the computer device **101** may output the results of executing the instructions to the user through the output devices **115**.

Some computer devices **101** can operate in a network of other computer devices **101**. The network may be, for example, a local area network (LAN) **119** or a wide area network (WAN) **121**, such as the Internet. For connection to the local area network **119**, the computer device **101** may include a network interface or adapter **123**. For connection to the wide area network **121**, the computer device may include a modem **125** or other means for establishing communications over the wide area network **121**. Of course, it will be appreciated that the network connections shown are exemplary, and that other techniques for establishing a communications link with other computer devices **101** can be used. Further, those of ordinary skill in the art will appreciate that a variety of communication protocols may be used for exchanging data between computer devices **101**, such as TCP/IP, Ethernet, FTP, HTTP.

System for Creating and Executing a Training Script

FIG. **2** illustrates a master device **201** for creating a training script, and a servant device **211** for implementing a training script. More particularly, a user employs the master device **201** to create instructions making up a training script, and the servant device **211** executes the instructions of the training script. As will be appreciated by those of ordinary skill in the art, the master device **201** may be a computer device **101** of

the type described about, such as a desktop or laptop computer, implementing a software application for defining training scripts. Of course, with various embodiments of the invention, the master device **201** may instead be a hardware or firmware device for creating training scripts.

Once the user has created the training script, the script is transferred from the master device **201** to the servant device **211**. With some embodiments of the invention, the servant device **211** may be a portable computer device **101** of the type described above that can be easily carried by an athlete during a workout. For example, the servant device **211** may be embodied as a wristwatch with one or more remote sensors for measuring various characteristics of the user's workout. Of course, the servant device **211** also may be implemented with other types of portable computer devices, such as personal digital assistants. Alternately, the servant device **211** may be implemented using hardware or firmware.

Device for Creating a Training Script

As seen in FIG. **2**, the master device **201** includes a master control module **203**, a master user interface module **205**, a master device interface module **207**, and a master script database **209**. As will be discussed in detail below, for each step to be included in a training script, the master user interface module **205** prompts a user to input data specifying an action to be performed for that step. The master user interface module **205** also prompts the user to specify a quantity of the action to be performed. From the input data received through the master user interface module **205**, the master control module **203** creates training steps for operating the servant device **211**, and compiles the training steps into a training script file.

The master control module **203** then forwards the training script file to the master script database **209** for storage. As will be appreciated by those of ordinary skill in the art, the master script database **209** may be embodied using any suitable memory medium. The master script database **209**, for example, may be implemented on a microcircuit random access memory, a magnetic disk drive, a writable optical disk drive or the like.

When the user desires to exercise using the created training script, the user instructs the master control module **203** to transfer the training script file from the master script database **209** to the master device interface module **207**. The master device interface module **207** then provides the training script file to the servant device **211**. As will be appreciated by those of ordinary skill in the art, the master device interface module **207** can be implemented using a variety of techniques. For example, the master device interface module **207** may employ a wireless communication device to communicate with the servant device **211**, such as an infrared or radio frequency transmitter. Alternately, the master device interface module **207** may include a cable port for employing a hard-wired communication device to communicate with the servant device **211**, such as an RS-232, USB or Firewire link.

With some embodiments of the invention, the master device interface module **207** or other interface module may allow the master device **201** to transmit training scripts files to and/or receive training script files from a variety of other devices in addition to the servant device **211**, such as other computing devices **101** including, for example, other master devices **201**. Again, the master device interface module **207** may employ any suitable communication protocol to transfer training script files from the master device interface module **207** to these other devices. It should be noted that training script files, like other electronic files, can be transferred from the master device **201** to other computer devices **101** using any known file transfer technique. For example, the master device **201** may be embodied by a personal computer that also supports electronic mailing protocols, such as the POP3 protocol. With this arrangement, a user can transfer a training script from the master device **201** to another computer device **101** using electronic mail. Also, protocols such as WiFi or Bluetooth for wireless communications can be used to wirelessly transmit training script files to other devices.

By allowing a user to transfer created training script files from the master device **201** to another computer device **101**, athletes may easily and conveniently share successful training routines with each other. Rather than having to write down a particular training routine, an athlete can simply transfer the electronic training script file to another athlete using, for example, electronic mail. The athlete receiving the electronic training script file can then forward the file to his or her servant device **211**, and exercise according to the routine defined by the training script file without ever having to examine or manually copy the workout routine defined by the training script.

Creating a Training Script

FIG. **3** illustrates a first user interface **301** provided by the master user interface module **205** for creating a training script. The interface **301** includes a group of data fields that allow a user to define a user profile. As will be discussed below, defining a user profile allows a user to associate one or more workouts and a servant device **211** with a particular athlete. This conveniently allows more than one person to share the use of the master device **201** without confusing training script files between the users.

The interface **301** includes a name field **303** naming the profile. Thus, a user may enter his or her own name into the name field **303** to identify the user profile with that particular user. Each user profile includes a schedule of training scripts selected by the user. Each profile also contains a group of training script files, referred to as the "favorite workouts" group. A user may then add existing training script files to or delete training script files from this group of favorite training scripts. The favorite workouts group allows a user to avoid having to scroll through every training script created with or received by the master device **201** each time the user wants to use a particular script. Instead, the user can simply include his or her favorite training script in the "favorite workout" group for the user's profile, and select a desired script for use directly from this smaller group. As will be explained in detail below, when a user "synchronizes" the servant device **211** to the master device **201**, both the training scripts in the "favorite workout" group and the scheduled training scripts are copied to the servant device **211**.

In addition to the name field **303**, the interface **301** also has a servant device identification field **305**, which associates the user profile with a particular servant device **211**. As noted above, a computer device **101** used to embody a servant device **211** may have one or more sensors **113***d* for measuring the characteristics of a user's activities. A training script may thus include instructions that are executed in response to the servant device **211** receiving data from a particular type of sensor **113***d*. Different servant devices **211** may have different types of sensors **113***d*, however, so a workout that may execute on one servant device **211** may not properly execute on a different servant device **211**. The value of the servant device identification field **305** can be used to address differences in servant devices by specifically identifying the user's servant device **211**, and, by extension, the sensors **113***d* and other equipment included with the user's servant device **211**.

For example, the master device **201** may include a table correlating servant device **211** identification values with one or more sensors **113***d*. Thus, when the user enters a value into

the servant device identification field **305**, the master device **201** can determine the sensors **113***d* employed by the user's servant device **211** from the table. Alternately, the master device **201** may use the value entered into the servant device identification field **305** to determine the sensors **113***d* available for use by the servant device **211** from a remote source, such as a database available over a network (e.g., the Internet). If the user's servant device **211** does not have a particular sensor **113***d* required by a training script, then the master device **201** may refrain from copying that training script to the user's servant device **211** during synchronization.

The interface **301** also includes age, weight and sex fields **307-311**, respectively. The user may enter this information about himself or herself into these fields. Of course, with other embodiments of the invention, the interface **301** may include fields for additional user health information, or may omit any of fields **307-311** entirely.

After the user has created a user profile by entering the relevant values into the interface **301**, the master user interface module **207** displays interface **401** shown in FIG. **4**A. This interface, which is the main user interface for creating and using training scripts, includes a user profile sub-interface **403**, a set watch sub-interface **405**, a plans sub-interface **407**, a workout sub-interface **409**, a favorite workouts sub-interface **411**, and a calendar sub-interface **413**. The user profile sub interface **403** includes a name field **403***a*, identifying the name of the currently selected user profile, and an edit button **403***b*, which, when activated, causes the master user interface module **207** to display the user interface **301**. The set watch sub-interface **405** is a command button. As will be discussed in detail below, activating the command button **405** causes the master user interface module **207** to display a user interface for adjusting the settings of the associated servant device **211**, which, in this embodiment, is a watch. The favorite workouts sub-interface **411** provides a listing of the training scripts the user has included in the favorite workouts group of the profile.

The workout sub-interface **409** includes a list **409***a* of previously created (or received) training scripts corresponding to individual workout routines. The workout sub-interface **409** also includes a workout builder command button **409***b* that allows a user to create a new training script. When a user activates the workout builder command button **409***b*, the master user interface module **207** provides the user with interface **501** shown in FIG. **5**A. The operation of this interface will be explained with reference to FIGS. **5**A-**5**P and to FIG. **6**, which illustrates a flowchart showing how a training script can be created using the interface **501**.

First, in step **601**, the user enters the name of the training script into the workout selection field **503** of the interface **501**. As will be appreciated by those of ordinary skill in the art, the workout selection field **503** provides a drop-down menu **503***a*, listing the previously created workout training scripts associated with the current user profile, as shown in FIG. **5**B. Thus, if the user is going to edit a training script that already exists, the user simply selects the name of that training script from the drop-down menu **503***a*. If the user instead wishes to create a new workout training script, he or she selects the name "New Workout" from the drop down menu **503***a*. This selection ensures that the remaining fields in the display **501** are empty for the user to enter values, as shown in FIG. **5**A.

The interface **501** also includes a workout name field **505** and a description field **507**. The workout name field **505** allows a user to create a name for the new workout training script, as shown in FIG. **5**C. Providing a name for a workout training script conveniently allows it to be easily referenced later. As also seen in FIG. **5**C, the description field **507** can contain a brief description of the workout training script, such as an identification of its purpose or difficulty.

The interface **501** further includes a steps interface **509** (referred to by the title "STEPS" in the figure). The steps interface **509** includes a plurality of step sub-interfaces **511**. Each step sub-interface **511** appears as a row of six fields **513-523**. More particularly, as seen in FIG. **5**A, each step sub-interface **511** includes a repeat field **513**, an activity field **515**, a duration field **517**, an intensity field **519**, a prompt field **521**, and an auto start field **523**. The function and operation of each of these fields **513-523** will be described in detail below. The steps interface **509** also includes edit buttons **525-531** for editing the arrangement of the step sub-interfaces **511**. The function and use of these edit buttons **525-531** are well known in the art, and thus will not be discussed in detail here.

Turning first to the field **515**, this field provides a drop-down menu **515***a* listing a variety of actions. For example, as seen in FIG. **5**D, the drop-down menu **515***a* may include the actions "open" (that is, no specified activity), "stretch," "warm up," "run," "walk," "jog," "go," and "recover." Of course, it will be appreciated that other embodiments of the invention may list more, less or different activities. Using the drop-down menu **515***a*, in step **603** the user selects a particular activity to be displayed in the field **515**. It should also be noted, however, that while the illustrated embodiment of the invention employs the drop-down menu **515***a* to select a value for the field **515**, other embodiments of the invention may allow a user to enter a value directly into the field **515**.

When the user selects the value of the field **515**, this value is then added to the prompt field **521**. The prompt field **521** for a step sub-interface **511** contains the information that will be displayed to a user when instructions corresponding to that step are later executed by a servant device **211**. Thus, if the user selects the activity "run" for the field activity field **515**, the word "run" is added to the prompt field **521**, as seen in FIG. **5**E. Of course, the display of the selected activity (or duration or intensity, as will be discussed below) in the prompt field **521** may be omitted with various embodiments of the invention. Further, as will be appreciated by those of ordinary skill in the art, some embodiments of the invention may omit the prompt fields **521** altogether.

The duration field **517** in a step sub-interface **511** allows the user to select a duration for performing the activity designated in the step. Thus, the duration field **517** provides a drop down menu **517***a* listing a variety of duration units, as shown in FIG. **5**F. The menu **517***a* may include, for example, "open" (indicating that no duration has been selected) "time," and "distance." Of course, other embodiments of the invention may provide still other units for determining a duration of an activity. Using this menu **517***a* (or, with some embodiments of the invention, entering a value directly into the duration field **517**), the user selects a duration of the activity in step **607**.

Depending upon the duration type selected for the duration field **517**, the interface **501** may provide a sub-field corresponding to the selected duration type. For example, if the user selects the value "time" for the duration field **517**, the interface **501** provides a time sub-interface **517***b* as shown in FIG. **5**G. The time sub-interface **517***b* includes a chronographic display defining the time period for which the activity defined for the step is to be performed. Using conventional arrow buttons, the user can adjust the value of the sub-interface **517***b* to define a desired time period.

Similarly, if the user selects the value "distance" for the duration field **517**, the interface **501** provides sub-interfaces **517***c* with fields **517***d* and **517***e*, as shown in FIG. **5**H. The field **517***d* contains a value for a distance to be traveled while

performing the activity. The user can type a desired value into this field **517***d*. The field **517***e* then provides a drop down menu, accessed by activating the button **517***f*, listing different distance units. For example, with the illustrated embodiment, the list includes "miles," "kilometers," and "meters." Of course, those of ordinary skill in the art will appreciate that still other distance units, such as "yards" and "feet," may be alternately or additionally included in the list.

Thus, a user selects a particular type of duration, and enters values into the sub-interface fields associated with that type of duration in step **605**. The values entered by the user then also appear in the prompt field **521**. For example, if the user selects a duration value of "6.00 miles" for the duration field **517**, this value also appears in the prompt field **521** as shown in FIG. **5**I. It should be noted, however, that a user might choose not to select any values for a duration of the designated activity, and instead leave the value of the field **517** as "open." In this situation, no information is added to the prompt field **521**, as shown in FIG. **5**E.

Next, in step **607**, the user may select an intensity for the workout by entering a value into the intensity field **519**. As seen in FIG. **5**J, the intensity field **519** provides a drop down menu **519***a* listing different types of intensity measurements. For example, with the illustrated embodiment, the intensity field **519** provides a drop down list **519***a* including the intensity types "open" (when no value is selected), "heartrate," "pace", "heartrate less than or equal to," and "heartrate greater than or equal to." Of course, those of ordinary skill in the art will appreciate that other units of intensity may alternately or additionally be displayed. As with the duration field **517**, when any of the units are selected from the drop down list **519***a*, the interface **501** provides a sub-interface associated with that type of intensity measurement.

For example, if a user selects the intensity type "heartrate," the interface **501** provides the sub-interface **519***b* containing the fields **519***c* and **519***d* for defining a range of heartrates (measured based upon a percentage of a user's previously recorded maximum heartrate, for example), as shown in FIG. **5**K. Thus, a user types a minimum desired heartrate percentage value into the field **519***c* and a maximum desired heartrate percentage value into the field **519***d*. The values entered into these fields are then displayed in the prompt field **521**. For example, if the user enters the value 60% into the field **519***c*, and the value 85% in the field **519***d*, these values appear in the prompt field **521**, as shown in FIG. **5**K.

Similarly, if a user selects the intensity type "pace," the interface **501** provides the sub-interface **519***e*, as shown in FIG. **5**L. The sub-interface **519***e* includes a maximum time field **519***f* and a minimum time field **519***g*, in which the user enters values to select a maximum pace time and a minimum pace time, respectively. The sub-interface **519***e* also includes a distance unit field **519***h*, which provides a drop down menu listing various distance units. With the illustrated embodiment, the menu lists "kilometers," "miles," and "0.4/kilometers." Of course, those of ordinary skill in the art will appreciate that the menu may include more, fewer, or different units. By selecting a maximum pace time, a minimum pace time, and a distance unit, the user can define a maximum and minimum pace for performing the selected activity. It should be noted that, as the values are entered into each of the fields **519***f*-**519***h*, a mean of maximum pace time and the minimum pace time are added to the prompt field **521**. Thus, if the user selects a maximum pace of 6:00 minutes per mile, and a minimum pace of 8:00 minutes per mile, the average of 7:00 minutes per mile will appear in the prompt field **521**, as shown in FIG. **5**L.

If the user selects the "heartrate less than or equal to" intensity type, the interface **501** provides the sub-interface **519***i* containing the field **519***j*, as shown in FIG. **5**M. The user can simply enter a desired maximum heartrate (measured based upon a percentage of a user's maximum heartrate) into the field **519***j*. Likewise, if the user selects the "heartrate greater than or equal to" intensity type, the interface **501** provides the sub-interface **519***k* containing the field **519***l*, as shown in FIG. **5**N. Again, the user can simply enter a desired minimum heartrate (measured based upon a percentage of a user's maximum heartrate, for example) into the field **519***k*. With both sub-interfaces **519***i* and **519***k*, the selected heartrate value is then displayed in the prompt field **521**.

In this manner, a user will employ fields **515**-**519** of a step sub-interface **511** to define one step of a training script. By entering values into the fields of multiple step sub-interfaces **511**, a user may create a training script with a plurality of steps sequentially arranged in the order displayed in the step listing **509**. When the training script file is then created from the training script, it will contain instructions commanding the servant device **211** to sequentially display the value of the prompt field **521** (that is, the prompt) for each step, starting with the first step in the sequence, until the servant device **211** is instructed to display the value of the prompt field **521** for the next step.

The servant device **211** may receive an instruction to display the prompt for the next step of the training script file directly from the user. For example, if the servant device **211** is implemented as a digital watch, it may display the prompt for a step until the athlete using the servant device **211** depresses a command button, and then start the next sequential step in the training script file by displaying the prompt for that next sequential step. Thus, a user would perform the activity displayed in the prompt for a step for the duration and/or intensity specified in the prompt. Then, when the activity was completed, the user would depress the command button to start the next step. That is, the user would depress the command button to instruct the servant device **211** to display the prompt for the next step in sequence. Alternately, when a step is completed, the servant device **211** may receive an instruction to automatically start the next sequential step from within the instructions for the completed step, as will be explained below.

When creating or editing a training script, the user determines whether a step will have this automatic start feature by placing a check value in the auto start field **523** for that step's sub-interface **511** in step **609**. More particularly, if the user leaves the auto start field **523** for a step empty in step **609**, then the training script will not include an instruction in that step for the servant device **211** to automatically begin executing the instructions for the subsequent step. Instead, when that step is completed, the servant device **211** will temporarily stop executing instructions of the training script until receiving an input from the athlete using the servant device **211**. On the other hand, if the user inserts a check into the field **523** of a step's sub-interface **211** in step **609**, the resulting training script file will include instructions to automatically have the servant device **211** begin executing the instructions for the subsequent step when that step is completed.

As will be discussed in detail below, the servant device **211** may have one or more sensors **113***d* for measuring characteristics of the user's workout or performance data. These characteristics may include, for example, a time duration measured by a chronometer, a heart rate measured by a heart rate monitor, and a distance measured by an accelerometer or pedometer. These sensors **113***d* allow the servant device **211** to detect when a user has completed a specified duration or

intensity for a step. For example, if the user selects the duration of a step to be six minutes, then a servant device **211** having a chronometer may begin measuring a period of six minutes from when the step is started (that is, from when the value of the field **521** for that step is displayed to the user). If the value of the field **523** for that step was checked when the training script was created, then the training script file will include instructions commanding the servant device **211** to automatically begin executing the instructions for the subsequent step when the chronometer indicates that the six minute time period has expired.

Similarly, a step may call for a user to run a distance of six miles at a heart rate of 60% of the user's maximum heart rate or greater. If a servant device **211** executing that step had both a pedometer and a heart rate monitor, it could employ the pedometer to measure the distance run by a user and the heart rate monitor to measure the user's heart rate during that run. The servant device **211** could then record a total distance traveled by the athlete while the athlete's heart rate was above the minimum amount. If the user had placed a check in the auto start field **523** when defining the step, then the instructions in the training script file would command the servant device **211** to automatically begin executing the instructions for the next subsequent step after the servant device **211** detected that the athlete had run a total of six miles with his or her heart rate above the minimum amount.

Thus, by using creating a training script with steps that automatically start a subsequent step when the defined performance data is measured, the invention advantageously frees an athlete from having to constantly consider the status of his or her workout routine. That is, an athlete can focus on each activity of a workout, without having to continuously monitor if the athlete is complying with the planned duration or intensity for the activity. The servant device **211** informs the user when an activity has been satisfactorily performed by prompting the athlete to begin performing the next scheduled activity in the workout.

In addition to the auto start field **523**, each step sub-interface **511** also includes a repeat field **511**, as noted above. In step **611**, a user may employ the repeat field **511** to define a training script that repeats one or more steps. For example, if the user inputs the value "3" into the repeat field **511** for a step, as shown in FIG. **5**O, then the training script file will include instructions commanding the servant device **211** to repeat the step three times before executing the next sequential step. In addition, the user may use a linking arrow **511***a* attached to the repeat field **511** to link two or more sequential steps together for repetition, as shown in FIG. **5**P. Thus, the resulting training script would include instructions commanding the servant device **211** to execute the instructions of the first three steps listed in the step listing **509** once in sequence, and then to repeat the execution of these linked steps a second time before proceeding to the fourth step in the step listing **509** (that is, the "jog" step).

After the user has created a training script file by saving the steps making up a desired training script in step **613**, the user may return to the interface **401** shown in FIG. **4**A. Advantageously, in addition to allowing a user to create a new training script file or modify an existing training script file, the master device **201** will also allow a user to define a schedule of training scripts, hereafter referred to as a "plan." The creation of a plan will be discussed with reference to FIGS. **7**A-**7**C and FIG. **8**, which illustrate an interface **701** for creating a plan and a flow chart for using the interface **701** to create a plan, respectively.

As previously noted, the plan field **405** of interface **401** displays existing plans. If the user wishes to create a new plan, the user activates the plan builder command button **407***a*. In response, the master device **201** provides the user interface **701** illustrated in FIG. **7**A. This user interface **701** includes a plan selection field **703**, a plan name field **705**, and a plan description field **707**. In step **801**, the user enters the name of the desired plan into the plan selection field **703**. Conveniently, the plan selection field **703** may include a drop-down menu **703***a*, as shown in FIG. **7**B. If the user is editing an existing plan, the user may simply select the name of that plan from the drop-down menu **703***a*. If, however, the user wishes to create a new plan, the user selects the name "New Plan" from the drop-down menu **703***a*. The user may then enter a name into the planned name field **705** and a brief description of the new plan in field **707**, as also shown in FIG. **7**B.

The interface **701** also includes a settings sub-interface **709**, a workout sub-interface **711**, and a calendar sub-interface **713**. The calendar sub-interface displays a generic calendar with columns corresponding to the days of the week, while the workout sub-interface **711** displays a listing of existing training script files. In order to create or modify a plan, in step **803** a user drags each training script file from the workout sub-interface **711** to the desired location on the calendar sub-interface **713**.

For example, in FIG. **7**A, the workout sub-interface **711** lists the training script files entitled "stretch test," "Test 1," and "Test workout." The user may want to create a three-week workout plan having the "stretch test" workout scheduled on the Monday, Wednesday, and Friday of the first week of the plan. The user may also want the "Test 1" workout scheduled on the Sunday, Tuesday and Thursday of the second week of the plan, and the "Test workout" workout scheduled on the Monday and Thursday of the third week of the plan. To create this plan, the user can simply drag and drop icons for the corresponding training script files to the desired locations on the calendar sub-interface **713**, as shown in FIG. **7**C.

The module of dragging and dropping file icons is well known, and thus will not be discussed here in detail. Of course, those of ordinary skill in the art will appreciate that alternate techniques may be used to schedule training script files. Also, as seen in FIG. **7**C, the calendar sub-interface **713** may not continuously display the titles of the placed training script file icons, but may instead only display their titles when, for example, the user places a pointer over an icon. Alternately, the calendar sub-interface **713** may display the title of each icon placed in the calendar sub-interface **713**.

Once the user has placed the desired training script files at the appropriate locations in the calendar sub-interface **713**, the user designates the settings for scheduling the training script files to create or edit the plan in step **805**. As previously noted, the interface **701** includes a settings sub-interface **709**. The settings sub-interface **709** includes two fill radial buttons **715** and **717**, entitled "forward" and "backward," respectively. It also includes three anchor date radial buttons **719**-**723**. Beneath the first anchor date radial button **719**, entitled "fixed," is a calendar field **719***a* that allows a user to select a specific month, date and year. The second anchor date radial button **721** is entitled "user choice." The third anchor date radial button **723** includes a drop-down menu **723***a* listing the days of the week.

In order to establish a workout plan, the user anchors the first date or the last date of the training script files scheduled in the generic calendar of the calendar sub-interface to an actual date. For example, the user may with to schedule training script files to prepare for a marathon on Nov. 13, 2002. Accordingly, the user may want to anchor the plan so that the last workout of the plan takes place on Nov. 12, 2002. To do so, the user would select the anchor date radial button

719, and set the value of the calendar field 719*a* to Nov. 12, 2002. The user would then select the "backward" fill radial button 717, to have the plan scheduled backward from the last workout of the plan occurring on Nov. 12, 2002.

Alternately, the user may want to schedule a three-week plan that starts on the first Tuesday of each three-week period. In this case, the user would select the anchor date radial button 723, and select the day Tuesday from the drop down menu 723*a*. The user would also select the "forward" fill radial button 715, to have the plan scheduled forward from the first workout of the plan occurring on the first Tuesday of each three-week period.

Accordingly, in step 803, the user selects a fill setting for the plan, and in step 805 selects an anchor date for the plan. Then in step 807, the user activates the "save" button 725 to save the plan, completing the plan creation process.

Returning now to FIG. 4A, a user may select a schedule for plans or individual training script files to be included in the user's profile. As previously noted, the interface 401 includes a calendar sub-interface 413. The calendar sub-interface 413 displays a calendar showing the current month. To include a plan in the user's profile, the user first drags and drops a plan onto a date in the calendar sub-interface 413, as shown in FIG. 4B. In response, the master device 201 displays the schedule plan interface 901 shown in FIG. 9.

As seen in this figure, the plan interface 901 includes a plan data sub-interface 903, a fill setting sub-interface 905, a "cancel" button 907 and an "ok" button 909. The plan data sub-interface 903 includes the plan name, the length of the plan schedule, and the description of the plan. The fill setting sub-interface 905 includes two fill dial buttons 905*a* and 905*b*, entitled "forward" and "backward," respectively. The fill setting sub-interface 905 also includes an anchor date field 905*c*, which allows the user to specify a specific calendar date, and a drop down menu 905*d* listing the days of the week. As with the settings sub-interface 709 in the interface 701, the user may employ the fill setting sub-interface 905 to anchor the plan. When the user is satisfied that the plan schedule is correct, the user activates the "ok" button 909. In response, the master device 201 may place icons for the training script files making up the plan on their appropriate dates in the calendar sub-interface 413.

As previously noted, in addition to placing a plan schedule in the user profile, a user may also place a schedule for individual training scripts into the his or her user profile. That is, a user may drag and drop an icon for a single training script file from the workout sub-interface 409 at a desired location on the calendar sub-interface 413.

Synchronizing the Master Device with the Servant Device

When a user wishes to download training script files from the master device 201 to the servant device 211, referred to as "synchronizing" the master device 201 with the servant device 211, the user activates the "sync" button 415 in interface 401. In response, the master device 201 transfers all of the training script files listed in the favorite workouts sub-interface 411. In addition, the master device 201 transfers the upcoming scheduled training script files that have been place in the calendar sub-interface 413.

More particularly, the master device 201 notes the date of the synchronization, and identifies the subsequent dates for, for example, the upcoming week. The master device 201 then attaches a date tag to each of the training script files that have been placed in the calendar sub-interface 413 on the dates in the week following the synchronization date, and transfers these training script files with their associated date tags to the servant device 211. As will be discussed further below, the servant device 211 can then employ these date tags to ensure that the training script file is presented to a user for execution on the date scheduled with the master device 201.

In addition to transferring training script files to the servant device 211, the master device 201 may also receive information from the servant device 211 during synchronization. For example, with some embodiments of the invention, the servant device 211 may collect actual data regarding a user's workout, including the actual duration or intensity completed for activities listed in a training script file. The master device 201 can then associate this data with the icons for those training scripts in the calendar sub-interface 413. This conveniently allows a user to review his or her athletic performance in comparison with the criteria of the training script.

Device for Executing a Training Script

As previously noted, FIG. 1 also illustrates a servant device 211 for executing a training script. The servant device 211 includes a servant control module 213, a servant device interface module 215, and a servant script database 217. The servant device interface module 215 receives a training script file from the master device 201. The servant control module 213 then stores the training script file in the servant script database 217.

The servant device 211 also includes a display 219 and one or more sensors 221 (identified as sensors 115*d* in the above description of a general computer device) for detecting a characteristic of a user during a workout. The sensors 221 may include, for example, a heart rate monitor to measure a user's heart rate, an accelerometer, pedometer or Global Positioning Satellite (GPS) receiver to measure the distance that a user travels, or a blood pressure monitor to monitor a user's blood pressure. The sensors 221 may also include sensors for detecting a characteristic of the user's workout itself. For example, the sensors 221 may include a chronometer or chronograph for measuring time periods during which an action is performed. The sensors 221 may also include a bicycle force sensor, to measure an amount of force produced by a bicyclist while biking. Still further, the sensor 221 may be a special purpose sensor that can, for example, detect the operation of a weightlifting machine or other exercise device configured to provide performance data to the sensor. Of course, any suitable device for measuring performance data relating to a workout may be used as a sensor 221.

Still further, the servant device 211 may include a servant user interface module 223 for detecting an input by a user. For example, the servant device 211 may have a servant user interface module 223 for detecting the depression of an input button. This servant user interface module 223 allows a user to input data to the servant device 211 regarding the user's workout that may not easily be detectable by a sensor 211. For example, a training step may call for an athlete to perform 30 repetitions of a weight lifting exercise. An automated sensor cannot easily detect the number of repetitions of a weight lifting exercise using a convention weight lifting device. The athlete, however, may conveniently depress a command button after having performed the scripted 30 repetitions. The servant user interface module 223 can then detect the depression of the command button, and forward this information to the servant control module 213.

When an athlete wants to exercise according to a training script, the user selects the training script file with that training script from the servant script database 217. In response, the servant control module 213 executes the appropriate instructions defined in the training script. More particularly, by executing the instructions in the training script file, the servant control module 213 causes the display 219 to display the prompt for each step included in the training script file. As previously noted, the display 219 will sequentially display the

prompt for each step in the training script until the servant control module **213** receives an instruction commanding the display **219** to display the prompt for the next step. As was also previously explained, this instruction may be provided directly from the user by, for example, the user depressing a command button. Alternately, this instruction may be automatically generated when one of the sensors **221** measures a specified value, as discussed in detail above.

CONCLUSION

Thus, the master training script device of the invention conveniently allows a user to create a training script defining one or more steps of a workout routine, where each step may include an activity, a duration for performing that activity, and an intensity at which the activity is to be performed. Further, one or more steps of the training script can be self starting in response to performance data detected by sensors of the servant training script device. This conveniently frees the athlete from having to continuously monitor the status of his or her workout activities. Still further, the training script device conveniently allows a user to transfer training scripts to other training script devices, so that athletes can share successful training scripts.

While the invention has been described with respect to specific examples including presently preferred modes of carrying out the invention, those skilled in the art will appreciate that there are numerous variations and permutations of the above described systems and techniques that fall within the spirit and scope of the invention as set forth in the appended claims.

What is claimed is:

1. A training device comprising:

at least one sensor configured to measure at least one physical performance characteristic of a user during a workout;

a first computing device that is portable and selectively attachable to the user, including:

a receiver configured to electronically receive an electronic training script defining a sequence in which the user is instructed to perform a plurality of activities, and

a presentation unit configured to prompt the user to perform a next activity of the plurality of activities in the sequence based on a measurement of the at least one physical performance characteristic indicating completion of a previous activity in the sequence.

2. The training device recited in claim **1**, wherein the physical performance characteristic is a heart rate of the user.

3. The training device recited in claim **1**, wherein the physical performance characteristic is a blood pressure of the user.

4. The training device recited in claim **1**, wherein the physical performance characteristic is a blood-oxygen content of the user.

5. The training device recited in claim **1**, wherein prompting the user comprises presenting an instruction to run.

6. The training device recited in claim **5**, wherein prompting the user comprises presenting an instruction to run at a predetermined speed.

7. The training device recited in claim **5**, wherein prompting the user comprises presenting an instruction to run a predetermined distance.

8. The training device recited in claim **5**, wherein prompting the user comprises presenting an instruction to run for a predetermined amount of time.

9. The training device recited in claim **1**, wherein the prompting the user comprises presenting an instruction to rest.

10. The training device recited in claim **9**, wherein prompting the user comprises presenting an instruction to rest for a predetermined amount of time.

11. The training device recited in claim **1**, wherein prompting the user comprises presenting an instruction to stretch.

12. The training device recited in claim **11**, wherein prompting the user comprises presenting an instruction to stretch for a predetermined amount of time.

13. The training device recited in claim **1**, wherein the at least one sensor includes a second receiver configured to receive information from a remote sensing device.

14. The training device recited in claim **13**, wherein the remote sensing device is a heart rate monitor.

15. The training device recited in claim **13**, wherein the remote sensing device is an accelerometer.

16. The training device recited in claim **1**, wherein the at least one sensor is a pulse rate sensor configured to contact the user to detect a pulse rate of the user.

17. The training device recited in claim **1**, wherein the at least one sensor is an accelerometer configured to measure a travel speed, a travel distance or both a travel speed and a travel distance of the user.

18. The training device recited in claim **1**, wherein the training script includes a plurality of steps, and wherein each of the steps has a defined performance data, and wherein the plurality of steps each automatically start a subsequent step when the defined performance data of the previous step has been measured.

19. The training device recited in claim **1**, wherein the at least one sensor and the first computing device are configured to communicate wirelessly.

20. The training device of claim **1**, wherein the presentation unit is configured to prompt the user to provide input prior to prompting the user to perform the next activity.

21. A training device comprising:

at least one sensor configured to measure at least one physical performance characteristic of a user during a workout;

a first computing device that is portable and selectively attachable to the user, the first computing device including:

a receiver configured to receive an electronic training script defining a sequence in which the user is instructed to perform a plurality of activities; and

an output device configured to prompt the user to perform a next activity of the plurality of activities in the sequence based on a measurement of the at least one physical performance characteristic

indicating completion of a previous activity in the sequence.

* * * * *

专利名称(译)	培训脚本		
公开(公告)号	US7946959	公开(公告)日	2011-05-24
申请号	US10/413366	申请日	2003-04-15
[标]申请(专利权)人(译)	NIKE，Inc.		
申请(专利权)人(译)	NIKE，INC.		
当前申请(专利权)人(译)	NIKE，INC.		
[标]发明人	SHUM ALBERT HELPRIN THEODORE H CLARK JAMES W		
发明人	SHUM, ALBERT HELPRIN, THEODORE H CLARK, JAMES W		
IPC分类号	A63B71/00 A61B5/00 A61B5/021 A61B5/024 A61B5/11 A63B24/00 A63B69/00 G09B5/02 G09B19/00		
CPC分类号	G09B19/0038 A63B69/00 A61B5/681 G09B19/00 G06F19/3481 A63B24/00 G09B5/02 A61B5/1112 A63B2220/40 A61B5/021 A63B2230/04 A61B5/145 A63B2225/20 A63B24/0075 A63B2220/34 A61B2562/0219 A63B2225/50 A63B2230/207 A61B5/02438 A63B2230/30 A63B2024/0078 Y10S482/901 A63B2220/17 A61B5/1118 A61B5/486 A61B2503/10 G06Q10/06311 G06Q10/109 G09B23/303 G16H20/30 H04L67/306 A63B71/0619 A63B2071/0663 A63B2220/12 A63B2230/50		
优先权	60/386210 2002-05-30 US		
其他公开文献	US20030224337A1		
外部链接	Espacenet USPTO		

摘要(译)

描述了一种训练脚本设备，其方便地允许用户创建定义训练例程的一个或多个步骤的训练脚本，其中每个步骤可以包括活动，执行该活动的持续时间以及活动的强度。被执行。此外，训练脚本的一个或多个步骤可以响应于执行训练脚本的训练脚本设备的传感器检测到的性能数据而自启动。这方便地使运动员不必持续监视他或她的锻炼活动的状态。此外，训练脚本设备方便地允许用户将训练脚本传送到其他训练脚本设备，以便运动员可以共享成功的训练脚本。