

AXON JUMP

KINEMATIC SPORTS TEST
SYSTEM

VERSION 2.01

USER'S MANUAL



SMALL DEVICES FOR
SPORTS TESTING



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CLICK WITH THE RIGHT MOUSE BUTTON IN THE DESIRED SUBJECT

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1. WELCOME

CONGRATULATIONS ON BUYING THE AXON JUMP SYSTEM FOR KINEMATIC TESTING. WE REALLY APPRECIATE YOUR TRUSTING US.

WE ARE VERY PROUD OF OUR FIRST PRODUCT, SINCE WE HAVE DEVOTED ALL OUR KNOWLEDGE, EXPERIENCE AND PASSION FOR SPORT TO IT.

ONE OF THE MOST IMPORTANT DESIGN PREMISES HAS BEEN THE SIMPLICITY AND INTUITION OF USE, BOTH OF THE SOFTWARE AND THE HARDWARE, SOMETHING YOU WILL PERCEIVE FROM THE FIRST MOMENT. WE ARE SURE IT WILL PROVIDE YOU WITH A LOT OF SATISFACTION WHEN TESTING YOUR ATHLETES AND RECORDING THEIR PROGRESS IN AN OBJECTIVE WAY.



WE HAVE WRITTEN THIS MANUAL NOT ONLY WITH THE INTENTION OF EXPLAINING HOW OUR SYSTEM WORKS, BUT ALSO WE HAVE INCLUDED A LITTLE THEORY, SUMMARIZED, AS REGARDS THE POSSIBLE EVALUATIONS, UNDERSTANDING OF RESULTS, SUGGESTIONS AND THE WAY OF FULLY PROFITING FROM THE EQUIPMENT. IF YOU WANT TO HAVE MORE INFORMATION ABOUT THESE EXHILARATING TOPICS, CONSULT THE BIBLIOGRAPHY WE HAVE USED, IN [5.4](#).

2. INTRODUCTION

2.1. HOW DOES THE SYSTEM WORK?

THE MAT PUTS INTO MOTION A HIGH RESOLUTION CHRONOMETER (1MILLISECOND) THAT IS FOUND IN THE SOFTWARE PROVIDED. THE HEIGHT AND SPEED OF THE JUMPS ARE CALCULATED THROUGH THE FORMULAE OF CLASSIC PHYSICS, KNOWING THE PLACE GRAVITY (9.81 M/S^2 AT SEA LEVEL). IF THE JUMP IS TECHNICALLY WELL DONE, THE EXACTNESS OF THE MEASUREMENT WILL BE VERY HIGH.

IT IS WORTH MENTIONING THAT THIS IS A **KINEMATIC** INSTRUMENT, THAT IS TO SAY, IT DESCRIBES THE MOVEMENT (TIME, SPACE AND THEIR DERIVATIVES) WITHOUT INFERRING THEIR CAUSES. THIS MEANS THAT WE WILL ONLY GET KINEMATIC VARIABLES FROM IT, SUCH AS TIME, SPACE AND SPEED. WITH A LITTLE KNOWLEDGE, WE ARE ABLE TO CALCULATE THE ACCELERATION IN STRETCHES OF RACES WITH THE PROGRAMMING CHRONOMETER FUNCTION.

THERE EXIST FORMULAE THAT DEDUCT **DYNAMIC** VARIABLES SUCH AS FORCE AND POWER IN THE JUMP, BUT WE HAVE DELIBERATELY REFRAINED FROM INCLUDING THEM SINCE THEIR ERROR IS QUITE SIGNIFICANT. THESE VARIABLES HAVE TO BE MEASURED WITH LABORATORY INSTRUMENTS, WHICH ARE HEAVY, EXPENSIVE AND MUCH MORE SOPHISTICATED, CALLED "FORCE PLATFORMS", WITH WHICH WE HAVE HAD EXPERIENCE IN SPORTSPEOPLE SINCE 1993, AND WE DO KNOW THE EXISTING DIFFERENCES AMONG THEM.



2.2. WHY DO WE TEST?

IF WE BEAR A SPORTIVE GOAL IN MIND, WE SHOULD PLAN THE TRAINING. IF WE PLAN A STRATEGY TO ACHIEVE THIS GOAL, THE FIRST THING WE HAVE TO DO IS KNOW WHERE WE ARE DEPARTING FROM IN ORDER TO HEAD DIRECTLY TOWARDS OUR GOAL.

HOW COULD WE REACH A PLACE IF WE DO NOT KNOW WHERE WE ARE?

DURING THE TRAINING, SOME CONTROLS CAN TELL US WHETHER WE ARE MAKING FOR WHAT HAS BEEN PLANNED OR WHETHER THE TRAINING PLAN NEEDS ADJUSTING.

THERE ARE MANY REASONS WHY AN ATHLETE HAS TO BE TESTED. THE FOLLOWING IS AN ARBITRARY LIST CONTAINING SOME OF THEM:

- IN ORDER TO HAVE OBJECTIVE DATA AS REGARDS THE ATHLETE'S CURRENT MECHANICAL PERFORMANCE
- IN ORDER TO BE ABLE TO PLAN TRAINING UPON CONCRETE BASES
- IN ORDER TO CONTROL WHETHER WE ARE APPROACHING THE PLANNED GOALS OR MOVING AWAY FROM THEM
- IN ORDER TO RECORD THE EVOLUTION OF AN ATHLETE, A TEAM OR GROUP
- IN ORDER TO KNOW WHETHER THE TRAINING IS EFFICIENT
- IN ORDER TO COMPARE AN ATHLETE WITH OTHERS
- IN ORDER TO INVESTIGATE
- IN ORDER TO OBJECTIVELY KNOW WHETHER THE ATHLETE IS TIRED
- IN ORDER TO DETECT SOME KIND OF TALENT
- IN ORDER TO SELECT GROUPS
- IN ORDER TO MOTIVATE THE ATHLETE
- IN ORDER TO ESTIMATE PERFORMANCE

2.3. COMPONENTS AND OPTIONAL PARTS

THE SYSTEM IS MADE UP OF:

- CONTACT MAT (3 MODELS, SEE DIFFERENCES IN SECTION 2.5)

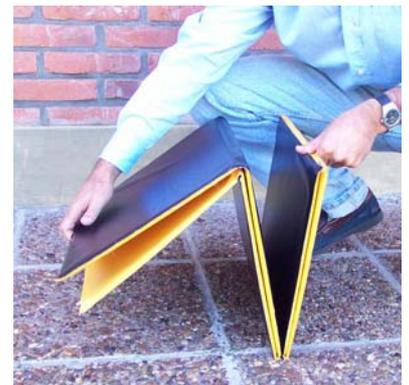
T MODEL



C MODEL



S MODEL



- CONNECTION WIRE (3.6 MTS) RCA MALE - MALE

- CONNECTOR FOR THE PC DB25 MALE - RCA FEMALE





- INSTALLATION CD CONTAINING THE SOFTWARE (IT INCLUDES THE DISKETTE VERSION), THE INSTRUCTIONS MANUAL, ACROBAT READER, AND OTHER USEFUL PROGRAMS WHICH ARE DISTRIBUTED FOR FREE ON THE INTERNET.

■ **TRANSPORTATION BAG**



T MODEL



C MODEL



S MODEL

THE COLOR OF THE MAT AND BAGS MAY VARY ACCORDING TO THEIR AVAILABILITY.

OPTIONAL PARTS:



- EXTRA MATS (FOR ANY MODEL, ALL OF THEM ARE INTERCONNECTIVE INDISTINCTLY WITH ONE ANOTHER)
- INTERCONNECTION CABLES - 10 MTS LONG (ONE FOR EACH EXTRA MAT) RCA MALE-MALE
- LENGTHENING CABLES - 20 MTS. RCA MALE-FEMALE



2.4. CHARACTERISTICS

THE AXON JUMP CONTACT MAT IS A SEMIRIGID, FOLDING, PORTABLE INSTRUMENT, DRIVEN BY SOFTWARE AND IT CAN BE CONNECTED TO ANOTHER MAT IN ORDER TO MEASURE SEVERAL POINTS IN A TRACK. IT IS DESIGNED FOR:

THE TEST OF DIFFERENT KINEMATIC MECHANICAL CAPACITIES IN SPORTSPEOPLE, SUCH AS: JUMP CAPACITY IN DIFFERENT CONDITIONS, FATIGUE IN CONTINUOUS JUMPS, BODY'S HORIZONTAL DISPLACEMENT, PLYOMETRICS OF UPPER LIMBS, FREQUENCY IN SKIPPING AND PROGRAMMABLE AUTOMATIC CHRONOMETER.

THE TRAINING OF PLYOMETRIC SESSIONS OF CONTINUOUS JUMPS WITH VISUAL FEEDBACK IN REAL TIME, BEING ABLE TO VARY THE VOLUME, INTENSITY AND PAUSES OF SUCH SESSIONS.



THE RECORDING OF ALL THE VARIABLES OBTAINED THROUGH THE EVALUATIONS, FOR THEIR POSTERIOR MANAGEMENT, GRAPH AND MAKING OF REPORTS AND RESULT COMPARISONS.

2.5. DIFFERENT MODELS

THERE ARE THREE MAT MODELS AVAILABLE, ACCORDING TO EACH NECESSITY. ALL OF THEM ARE DRIVEN BY THE SAME SOFTWARE, THEREFORE, THEY ALL OFFER THE SAME SERVICES. THEIR DIFFERENCE IS BASED ON THEIR **SIZE AND PORTABILITY**.

T MODEL



THE “T”HREE-CELL CLASSIC. IT IS THE CHEAPEST AND BEST-SELLING MODEL. **MEASURES:** 103CM X 81CM UNFOLDED, 34CM X 81CM X 4CM FOLDED. IDEAL TO USE AT THE BEGINNING AND HAVE IT AS A SECOND MAT (FOR SPEED MEASUREMENTS) WHEN ACQUIRING ONE OF THE FOLLOWING MODELS:

C MODEL



THE SAME AS THE PREVIOUS ONE BUT A FOUR-CELL ONE. IDEAL FOR GYMNASIUMS AND DOCTOR’S OFFICES.

33% BIGGER IN ORDER TO MAKE THE EXECUTION OF MAXIMUM JUMPS, DROP JUMPS AND JUMPS IN SERIES EASIER. ALSO, IT IS EASIER TO RECORD TIMES IN A RUNNING SUPPORT PHASE DUE TO ITS LARGER SIZE.



MEASURES: 138 CM X 81CM UNFOLDED, 34CM X 81CM X 6CM FOLDED.



S MODEL

THE LAST MODEL WHICH WAS DEVELOPED. ITS PORTABILITY AND HARDINESS ARE HIGHER THAN IN THE PREVIOUS MODELS. IT IS IDEAL FOR PROFESSIONALS WHO NEED TO GO TO DIFFERENT TESTING LOCATIONS.



MEASURES: 104CM X 82CM UNFOLDED,
34CM X 41CM X 6CM FOLDED.

ITS BAG HAS HANDLES AND A STRAP, APART FROM A BACK POCKET DESIGNED TO KEEP BINDERS OR FOLDERS.



2.6. PRECAUTIONS AND MAINTENANCE

THE CONTACT MAT IS A PRECISION INSTRUMENT (REMEMBER IT IS CAPABLE OF MEASURING WITH A 1MSEC-RESOLUTION) AND IT THEREFORE NEEDS TO BE TREATED AS SUCH. 

DESPITE BEING VERY HARD WHEN FACING THE EFFORTS PROVOKED BY THE JUMPS, ABOVE ALL, DURING FALL IMPACTS, IT IS VERY DELICATE WHEN FACING OTHER MECHANICAL EFFORTS, FOR WHICH IT IS NOT CALCULATED, SUCH AS ITS CELLS FLEXION OR DROPS. 

OBSERVING THESE SIMPLE RECOMMENDATIONS, YOU WILL HAVE THE INSTRUMENT AVAILABLE FOR USE IN EXCELLENT CONDITIONS, MAKING ITS USEFULNESS LONGER!

- TEST ON FLAT HARD FLOORS (NOT ON GRASS, SOIL, SOFT MATS OR FLOOR TILES WITH RAISED AREAS).
- ZIGZAG-FOLD IT CORRECTLY, AS SHOWN IN THE PICTURES.
- AVOID DUSTY OR SANDY FLOORS, SINCE THEY MAKE SLIDING EASIER.
- DO NOT FOLD THE CELLS.
- DO NOT LEAVE IT EXPOSED TO HIGH TEMPERATURES OR SUNLIGHT.
- DO NOT STEP ON IT WITH NAILS OR HIGH HEELS.
- WHEN IT IS FOLDED, DO NOT STEP OR PLACE HEAVY OBJECTS ON IT.
- AVOID MOISTENING THE CONNECTORS.
- NEVER TRY TO OPEN OR CUT THE MAT SINCE THIS MAKES THE GUARANTEE NO LONGER VALID.
- DO NOT JUMP ON THE SAME PLACE ALL THE TIME. TRY TO USE THE WHOLE SURFACE IN A UNIFORM FASHION.
- DO NOT PULL THE CABLE IN ORDER TO UNPLUG IT FROM THE MAT OR THE CONNECTOR.
- DO NOT TRY TO OPEN THE CONNECTOR SINCE THAT PUTS IT OUT OF ACTION.



MAINTENANCE:

CLEAN IT WITH A DAMP CLOTH AND THEN DRY IT WITH A CLEAN AND DRY COTTON CLOTH.

IF IT IS DIRTY, CLEAN IT WITH A DAMP CLOTH WITH A LITTLE SOAP OR DETERGENT, THEN RINSE IT OUT WITH A DAMP CLOTH UNTIL THERE IS NO MORE DETERGENT, AND THEN DRY IT WITH A DRY CLOTH.

THE CONNECTORS MUST BE KEPT CLEAN AND DRY IN ORDER TO AVOID ELECTRICAL PROBLEMS IN THE PC.

2.7. TRANSPORTING



THE MAT SHOULD BE TRANSPORTED IN ITS BAG, AND IT MUST BE **CORRECTLY FOLDED**. THERE IS ENOUGH ROOM IN THE POCKET FOR THE CD, THE CONNECTOR AND THE CABLE.

WHEN TRAVELING, IT SHOULD ALWAYS BE CARRIED AS HAND BAGGAGE SO AS TO AVOID BEING KNOCKED OR PLACED UNDER HEAVY PIECES OF LUGGAGE OR BULK.



THE IDEAL WAY OF STORING IT IS WITH THE BAG PLACED ON THE FLOOR AND THE HANDLES FACING UPWARDS, AVOIDING THE HORIZONTAL CRUSHING OF THE CELLS.

THE CORRECT WAY OF FOLDING IT IN ORDER TO STORE IT IN THE BAG IS SHOWN IN THE PICTURES ON PAGES 7 AND 8 ACCORDING TO THE MODEL.



IT MUST BE ZIGZAG-FOLDED, NEVER TRY TO ROLL IT!
S MODEL WILL BE FIRST FOLDED IN HALF AND THEN IN ZIGZAG.

ALMOST ALL THE FAULTS THAT HAVE BEEN REPORTED ARE DUE TO AN INADEQUATE FOLDING!

WE HAVE DECIDED TO PLACE SOME STICKERS SO THAT THE USER CAN SEE HOW TO FOLD IT CORRECTLY.

2.8. MINIMAL REQUIREMENTS

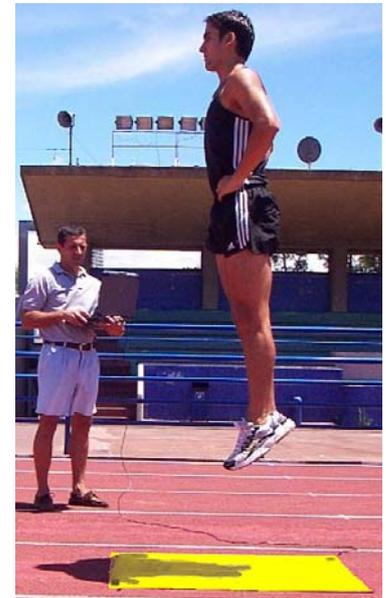
HARDWARE:	PROCESSOR:	486 DXII OR HIGHER
	RAM:	16 MBYTES
	FREE SPACE ON DISK:	8 MBYTES
	MOUSE:	PRESENT
	PORT:	PARALLEL (FOR PRINTER)
	MONITOR:	RECOMMENDED: VGA 800X600 COLOR
	DRIVE:	CD ROM OR DISKETTES
	MODEM	(FOR UPDATING SEE SECTION 3.2.2.)

SOFTWARE: WINDOWS® '95, '98, ME, NT, 2000 OR XP
ACROBAT READER® - SUPPLIED IN THE CD - IN ORDER TO SEE OR PRINT THIS MANUAL.



WINZIP® - SUPPLIED IN THE CD - IN ORDER TO UNZIP THE FILES DOWNLOADED FROM OUR WEBSITE.

WHEN TESTING HAS TO BE CARRIED OUT OUTDOORS OR IN TRAINING LOCATIONS WHICH ARE FAR, IT IS RECOMMENDABLE, BECAUSE OF COMFORTABLENESS REASONS, TO MAKE TO TEST WITH A NOTEBOOK



OR LAPTOP COMPUTER (PHOTOGRAPH CORRESPONDING TO TOSHIBA LIBRETTO). THE DESKTOP PC'S ARE VERY COMFORTABLE TO CARRY OUT THE TESTING IN GYMNASIUMS, EVALUATION CENTERS OR LABORATORIES AND TO MAKE THE SUBSEQUENT ANALYSIS OF THE DATA OBTAINED. HOWEVER, TAKING ALL THE NECESSARY PRECAUTIONS (SUCH AS ELECTRIC ENERGY, TABLE AND CHAIR), IT IS POSSIBLE TO MAKE THE TEST IN THE COUNTRY WITH A DESKTOP PC, MAYBE MORE COMFORTABLY THAN USING A PORTABLE COMPUTER.

IN **AXON BIOINGENIERÍA DEPORTIVA** WE ARE DESIGNING A SMALL PALMTOP COMPUTER HAVING JUST FOUR KEYS AND A BACKLITE SCREEN, DEVOTED TO THE TESTINGS USING OUR CONTACT MATS, WHICH WILL MAKE THE USE OF A DESKTOP PC UNNECESSARY WHEN ASSESSING IS CARRIED OUT.

3. INSTALLATION

BEFORE PUTTING THE AXNN JUMP EVALUATION SYSTEM INTO ACTION, BOTH THE MAT (HARDWARE) AND ITS PROGRAM (SOFTWARE) HAVE TO BE INSTALLED CORRECTLY.

3.1. HARDWARE

- IN ORDER TO INSTALL THE CONTACT MAT, TURN OFF THE CPU AS A PRECAUTION MEASURE. THEN LOCATE THE PARALLEL PORT OF THE PRINTER BEHIND THE CPU. IF A PRINTER WERE CONNECTED, TURN IT OFF AND UNPLUG IT. 
- NEXT INSERT THE CONNECTOR PROVIDED. IF YOU WISH GREATER STABILITY, TIGHTEN THE CORRESPONDING SCREWS USING A SMALL SCREWDRIVER.
- THEN CONNECT THE CABLE PROVIDED.





- PLACE THE MAT IN THE APPROPRIATE TESTING LOCATION AND CONNECT IT TO THE FREE END OF THE CABLE, PAYING ATTENTION TO ITS NOT BEING TIGHT.



REMEMBER YOU **CANNOT PRINT WHILE TESTING**, UNLESS YOU HAVE A DATA SWITCH IN THE PARALLEL PORT, YOUR CPU HAS TWO PARALLEL PORTS (IF YOU WISH AN EXTRA PARALLEL PORT, CONSULT YOUR HARDWARE SUPPLIER), OR YOU DO IT USING A SHARED OR NETWORK PRINTER.

IN CASE YOU TEST USING MORE THAN ONE MAT, YOU SHOULD CONNECT THE LONG CABLE BETWEEN BOTH MATS, USING THE CONNECTOR THAT IS FREE IN THE MAT CONNECTED TO THE

PC. THE SECOND MAT IS CONNECTED USING ANY OF ITS TWO CONNECTORS TO THE FREE END OF THE CABLE. ACCORDING TO THE MEASUREMENT THAT IS MADE, IT MAY BE USEFUL TO KNOW THE SEPARATION DISTANCE BETWEEN THE MATS SO AS NOT TO FORGET TO HAVE A MEASURING TAPE WHEN YOU ARE PERFORMING THE TESTING. THE SECOND MAT ALLOWS FOR THE CONNECTION OF A THIRD MAT USING ITS FREE CONNECTOR, AND SO ON.

3.2. SOFTWARE

3.2.1. INSTALLATION

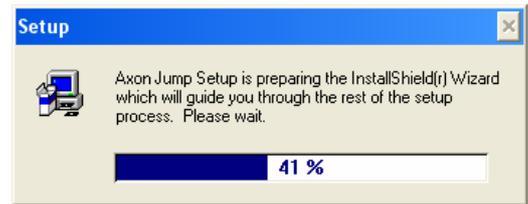


ONCE THE COMPUTER IS ON AND THE OPERATING SYSTEM WINDOWS® IS WORKING, FOLLOW THESE STEPS:

- IF YOU HAVE A PREVIOUS AXON JUMP VERSION INSTALLED, UNINSTALL IT FROM START\CONTROL PANEL\ADD OR REMOVE PROGRAMS. ([SEE SECTION 3.2.3](#))



- INSERT THE CD WITH THE PROGRAM IN ITS CORRESPONDING DRIVE. THE INSTALLATION PROGRAM WILL AUTOMATICALLY EXECUTE BY ITSELF.
- THE PROGRAM WILL ASK IN WHICH SUBDIRECTORY YOU PREFER TO INSTALL THE FILES. IF YOU HAVE NO SPECIFIC PREFERENCE, THE SYSTEM WILL INSTALL IT IN \PROGRAM FILES\AXON BIOING\AXON JUMP\
- THEN IT WILL ASK FROM WHICH FOLDER YOU PREFER TO ACCESS THE PROGRAM. IF NO CHOICE IS MADE, IT WILL DO IT FROM A FOLDER CALLED "\PROGRAM FILES\ AXON BIOING \AXON JUMP", BUT IF YOU WISH TO INSTALL IT IN ANOTHER FOLDER, YOU WILL BE ABLE TO CHOOSE IT FROM AMONG ALL THE FOLDERS INSTALLED IN YOUR COMPUTER, WHICH WILL APPEAR BELOW IN A LIST, OR YOU MAY CREATE A NEW ONE.



- THE SAME INSTALLATION PROGRAM IN ITS 3 1/2 DISKETTE VERSION ALSO EXISTS IN THE CD, SO THAT PROGRAM CAN BE INSTALLED IN A PC WHICH HAS NO CD ROM. YOU WILL HAVE TO COPY THE FILES FROM THE FOLDER "\DISKETTE VERSION WITHIN FOLDERS "\Disk 1", "\Disk 2" AND "\Disk 3", INTO THREE EMPTY DISKETTES LABELED WITH

THEIR CORRESPONDING NUMBERS. IN ORDER TO USE THEM IN A COMPUTER WITHOUT CD ROM, INSERT THE FIRST DISKETTE AND EXECUTE THE PROGRAM "SETUP.EXE". THEN FOLLOW THE INSTRUCTIONS AND INSERT THE OTHER DISKETTES WHEN THE PROGRAM ASKS YOU TO. THIS DISKETTE VERSION DOES NOT CONTAIN THE INSTRUCTIONS MANUAL. IF YOU WISH TO HAVE IT IN A COMPUTER WITH NO CD, YOU SHOULD LOOK FOR IT IN THE SUBDIRECTORY WHERE YOU INSTALLED THE PROGRAM AND THEN COPY IT INTO DISKETTES USING ANY BACKUP PROGRAM (YOU CAN USE THE WINZIP® SUPPLIED IN THE CD).

- YOU SHOULD INSTALL THE ADOBE ACROBAT READER® 6 TO VISUALIZE THIS MANUAL. YOU WILL BE ABLE TO READ IT FROM THE AXON JUMP PROGRAM (HELP MENU) OR FROM THE ADOBE ACROBAT READER® ALREADY INSTALLED, OPENING THIS MANUAL WHICH CAN BE FOUND IN THE SUBDIRECTORY YOU CHOSE TO INSTALL THE AXON JUMP PROGRAM.

3.2.2. UPDATING

WE CONTINUOUSLY USE OUR TESTING SYSTEM, AND WE ARE IN EVERYDAY CONTACT WITH USERS, COACHES AND ATHLETES. THIS LEADS TO NEW IDEAS, SUGGESTIONS AND IMPROVEMENTS WHICH ARISE AS WELL. IN **AXON BIINGENIERÍA DEPORTIVA**, WE CAPITALIZE ON THIS INFORMATION AND PERMANENTLY UPDATE OUR SOFTWARE. WHEN ALL THESE CHANGES DESERVE THE UPDATING OF THE PROGRAM, WE MAKE THE NEW VERSION AVAILABLE FOR OUR USERS THROUGH OUR WEBSITE PAGE, FREE OF CHARGE. WE HAVE A DATABASE OF THE E-MAILS SENT BY ALL THE PEOPLE WHO ACQUIRED OUR SYSTEM SO AS TO MAKE SURE ALL OF THEM KNOW WHEN THE NEW VERSION APPEARS.



OUR WEBSITE ON THE INTERNET IS WWW.AXN.COM.AR AND YOU CAN ACCESS FROM THE PROGRAM CLICKING THE UPPER RIGHT CORNER OF THE WINDOW.



GO TO "**DOWNLOADS**", FROM WHICH YOU WILL BE ABLE TO DOWNLOAD THE PROGRAM IN ITS CD VERSION OR IN THE 3-DISKETTE-VERSION. THE LATTER DOES NOT CONTAIN THE PRESENT MANUAL. BESIDES, YOU CAN DOWNLOAD THE UPDATED VERSION OF THIS MANUAL IN A SEPARATE FILE, AND SOME SAMPLE FILES.



IF YOU CHANGE YOUR E-MAIL ADDRESS OR BOUGHT THE SYSTEM FROM A THIRD PARTY, PLEASE WRITE TO INFO@AXN.COM.AR SO THAT WE CAN CHECK WHETHER YOU ARE IN OUR DATABASE.

3.2.3. UNINSTALLATION

IF YOU WISH TO REMOVE THE AXON JUMP PROGRAM FROM YOUR HARD DISK BECAUSE YOU ARE GOING TO UPDATE IT WITH A LATER VERSION OR BECAUSE YOU WILL NO LONGER USE IT IN YOUR COMPUTER, FOLLOW THESE STEPS:

- ACTIVATE THE WINDOWS® START MENU AND SELECT THE OPTION "CONTROL PANEL"
- CHOOSE "ADD OR REMOVE PROGRAMS"
- SELECT "**AXON JUMP**" FROM THE LIST AND CHOOSE "REMOVE"
- THE COMPUTER WILL REMOVE THE PROGRAM FROM YOUR HARD DISK.

THIS UNINSTALLING PROCESS WILL NOT REMOVE THE RECORDS OF THE TESTS MADE, AS LONG AS YOU HAVE NOT SAVED THEM IN THE SAME SUBDIRECTORY AS THE PROGRAM. DO NOT FORGET TO PERIODICALLY BACKUP THE FILES OF THE SPORTSPEOPLE WITH THEIR TESTS RESULTS AND TRAINING (.ATL), THEIR AVERAGES (.PMG), GRAPHS (.BMP O .WMF) AND REPORTS (.QRP) BEFORE THIS PROCESS, IN CASE YOU SAVE THEM IN A SUBFOLDER LOCATED UNDER \PROGRAM FILES\AXON BIOING\AXON JUMP\. THESE FILES CAN BE MOVED TO OTHER COMPUTERS IN ORDER TO ANALYZE THEM.

3.2.4. LAUNCHING THE PROGRAM



IN ORDER TO START THE PROGRAM, YOU HAVE TO GO TO THE WINDOWS® START MENU AND CHOOSE THE OPTION "PROGRAMS" / "**AXON JUMP**" / "**AXON JUMP**". YOU CAN ALSO ACCESS IT CLICKING ON THE CORRESPONDING ICON TWICE.

3.2.5. DIGITAL VERSION OF THIS MANUAL

THIS MANUAL CAN BE FOUND IT ITS DIGITAL VERSION IN PDF FORMAT, FOR WHICH YOU WILL HAVE TO OBTAIN ANY VERSION OF THE ADOBE READER FROM THE INTERNET IN ORDER TO VISUALIZE IT (OUR SITE HAS A LINK TO ADOBE). PAY ATTENTION TO THE DATE OF THE VERSION WHICH IS FOUND AT THE END OF EACH OF THESE PAGES.

IT CAN BE DOWNLOADED IN THE SAME WAY AS THE NEW VERSIONS OF THE PROGRAM FROM OUR SITE. **SEE SECTION 3.2.2.**



IF YOU WISH, YOU MAY PRINT IT IN A4 SHEETS OF PAPER AND HAVE IT BOUND. IN THIS WAY, YOU WILL BE ABLE TO CARRY IT WITH YOU, FOR INSTANCE, TO THE TEST LOCATION, IN CASE YOU ARE DOUBTFUL ABOUT ANYTHING.

3.3. TESTING THE SYSTEM

ONCE THE PROGRAM HAS BEEN LAUNCHED AND THE MAT CONNECTED, THE FIRST THING YOU HAVE TO DO IS TEST THE SYSTEM. SELECT THE OPTION "FILE" AND THEN "NEW" FROM THE MAIN MENU. THIS PROCEDURE MAY BE SIMPLIFIED PRESSING THE SHORTCUT BUTTON CORRESPONDING TO NEW FILE FROM THE GENERAL TOOL BAR.



ONCE A NEW WINDOW HAS POPPED OPEN, WHICH WILL CORRESPOND TO A NEW ATHLETE, SELECT THE OPTION "TOOLS" AND THEN "ASSESS" FROM THE MAIN MENU. YOU CAN ALSO AVOID SOME STEPS USING THE CORRESPONDING SHORTCUT BUTTON FROM THE ATHLETE'S TOOL BAR THAT HAS A CHRONOMETER AS ITS SYMBOL.

AT THIS MOMENT, THE TEST DIALOG WILL OPEN. IN THIS WINDOW, PRESS THE BUTTON THAT IS AT THE BOTTOM, ON THE LEFT: "MAT TEST". YOU SHOULD SEE THE FOLLOWING PICTURES DEPENDING ON WHETHER THE MAT IS FREE OR IF SOMEBODY IS STEPPING ON IT. THIS TEST MAKES SURE THE SYSTEM IS CORRECTLY CONNECTED.



TAKE INTO ACCOUNT THAT FOR THE SYSTEM TO WORK PROPERLY, THE FOOT'S TOUCH DOWN AND TAKE-OFF HAVE TO BE SIMULTANEOUS WITH THE CORRESPONDING PICTURE IN THE SCREEN, THAT IS TO SAY, DELAYS SHOULD NOT BE PERCEIVED BETWEEN THE ACTION OF STEPPING ON OR FREEING THE MAT AND THE CHANGE OF IMAGE IN THE SCREEN. IF DELAYS OR MISTAKEN INFORMATION ARE PERCEIVED, CONTACT US.

IF SOMETHING IS WRONG WITH THE CONNECTOR, FOR EXAMPLE IF IT IS UNPLUGGED, YOU WILL SEE THE FOLLOWING SYMBOL:



DO NOT TRY TO REPAIR THE MAT, CHECK THE INSTALLATION STEPS AGAIN, AND IF THERE ARE STILL ANY PROBLEMS GO TO SECTION ["5.2. PROBLEM SOLVING"](#).

4. RUNNING THE PROGRAM

THE BASIC CONCEPT TO TAKE INTO ACCOUNT IS THAT **EACH FILE CREATED BY THE PROGRAM REPRESENTS AN ATHLETE**. SINCE EACH FILE REPRESENTS A PERSON, THE NAME OF THE FILE WILL BE HIS/HER LAST NAME IN CAPITAL LETTERS, FOLLOWED BY HIS/HER FIRST (AND MIDDLE IF EXISTS) NAMES IN SMALL LETTERS, FOR EXAMPLE:

MARTINEZ JOSÉ LUIS.ATL

THE EXTENSION OF THE FILES GENERATED BY THE PROGRAM IS "ATL" (FROM ATHLETE). WE SUGGEST YOU SHOULD NOT CHANGE THE EXTENSION SINCE IT IDENTIFIES THE PROGRAM CREATING THEM.

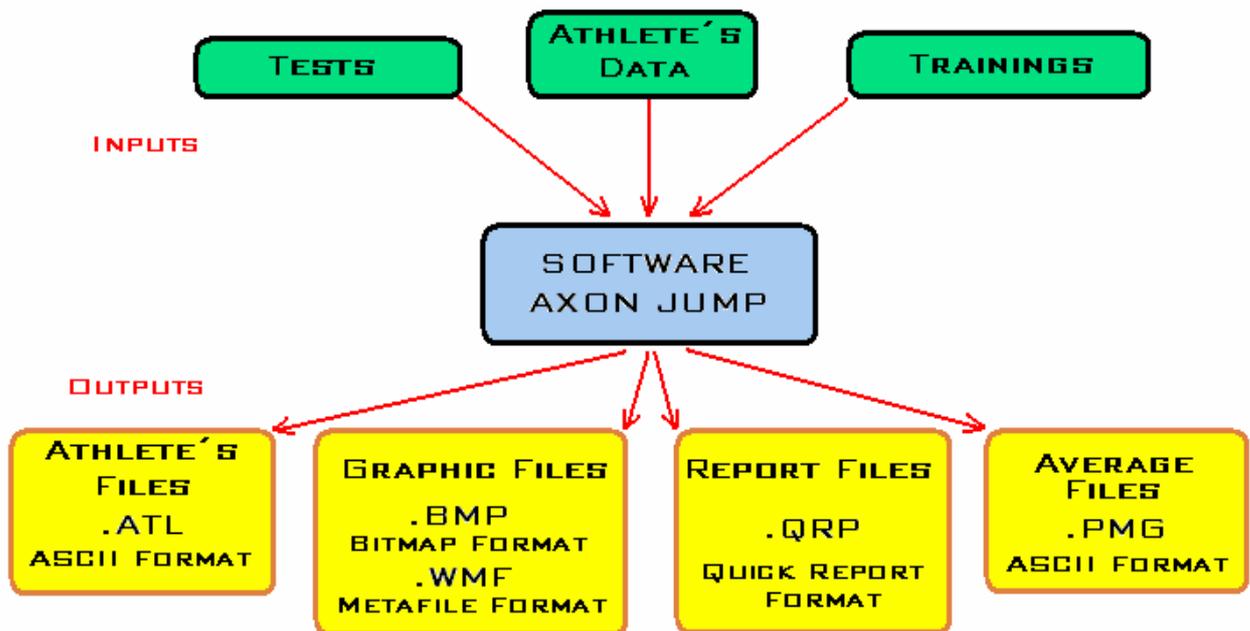
AS EACH FILE REPRESENTS AN ATHLETE, WE CAN BUILD A TREE-STRUCTURE IN THE HARD DISK, CREATING FOLDERS TO GROUP THEM. FOR EXAMPLE, WE CAN CREATE A



FOLDER CALLED "ATHLETICS" AND SUBFOLDERS SUCH AS "SPRINTERS", "THROWERS", "JUMPERS", ETC. ANOTHER WAY TO ADMINISTER THEM IS, FOR INSTANCE, TO CREATE FOLDERS ACCORDING TO SEX, AGE, CLUB, ETC., AND IN THE CASE OF A GYMNASIUM, ALSO ACCORDING TO TIMETABLES OR MEMBERSHIP NUMBER. THE WAY OF ADMINISTERING THE FOLDERS IS THE SAME AS THE ONE FOR ANY PROGRAM FOR WINDOWS®. THE FOLDERS CAN BE PREVIOUSLY CREATED WITH WINDOWS® EXPLORER OR DIRECTLY FROM THE DIALOG WINDOW "OPEN FILE" OR "SAVE FILE" FROM THE AXON JUMP PROGRAM.

4.1. FILES MANAGEMENT AND ATHLETE'S DATA

APART FROM THE ATHLETE'S FILE (.ATL), THE AXON JUMP SOFTWARE CAN CREATE **OTHER KINDS OF FILES**, ACCORDING TO THE USER'S CONVENIENCE:



WITHIN EACH **ATHLETE'S FILE** (.ATL), ALL HIS/HER DATA AND THE ONES CORRESPONDING TO HIS/HER TESTS AND TRAINING CAN BE FOUND. EACH TIME WE ASSESS THIS PERSON AGAIN, WE SHOULD OPEN HIS/HER FILE AND NOT START A NEW ONE. THE DATA OF THE TESTS AND TRAINING WILL JOIN THE SAME FILE. IT IS THE FILE UPON WHICH WE WILL WORK MORE FREQUENTLY. IT CAN ALSO BE OPENED USING ANY WORD PROCESSOR, AND EVEN ANY CALCULATION SHEET, SUCH AS EXCEL® OR QPRO®. IN CASE OF THE LATTER, YOU WILL HAVE TO SELECT "SEE ALL THE FILES" IN THE "OPEN FILE" WINDOW, AND "LIMITED BY A COMMA" IN THE ASSISTANT TO OPEN FILES.

THE **GRAPHS** CREATED BY THE PROGRAM (COMPARATIVES, EVOLUTION, ETC.), CAN BE SAVED SEPARATELY IN ORDER TO EDIT OR INSERT THEM IN OTHER PROGRAMS. THE SOFTWARE ALLOWS FOR TWO SAVING FORMATS OF THESE IMAGES: THE BITMAP FORMAT (.BMP), WHICH IS THE WINDOWS® STANDARD, AND THE METAFILE FORMAT (.WMF), WHICH IS A VECTORIAL FORMAT, IDEAL FOR ENLARGING THE SIZE WITHOUT LOSING QUALITY. THIS KIND OF FILE CANNOT BE RECOVERED WITH THE AXON JUMP PROGRAM UNLESS IT IS INSERTED IN A REPORT.

THE PROGRAM ALLOWS YOU TO CREATE **REPORT FILES**, WHOSE EXTENSION IS "QRP". THESE FILES ARE GENERATED AT THE MOMENT OF THE ANALYSIS WITH DATA THE USER WANTS: THEY CAN CONTAIN AN ATHLETE'S DATE, GRAPHS, ADDITIONAL COMMENTS, OR



DIFFERENT COMPARISONS. GENERALLY, THESE FILES ARE CREATED IN THE TEST LOCATION OR WHERE A PRINTER IS NOT AVAILABLE. THE AIM OF THESE FILES IS TO SAVE TIME OR TO BE ABLE TO E-MAIL THEM. THEN THEY CAN BE PRINTED WITHOUT HAVING TO DO THE REPORT AGAIN. THESE REPORTS CAN BE SIGNED WITH THE DATA OF THE PERSON ASSESSING OR THE ANALYST.

THE **AVERAGE FILES** ARE THOSE CONTAINING HOMOGENEOUS NUMERICAL DATA OF ONLY ONE TYPE OF TEST AND DIFFERENT ATHLETES. AT THE BOTTOM, THE AVERAGE AND STANDARD DEVIATION CALCULATED UPON THE DATA SELECTED CAN BE FOUND. THESE FILES CAN BE CREATED TO ANALYZE GROUPS OF SPORTSPEOPLE, THEY CAN BE PRINTED SEPARATELY AND ATHLETES CAN BE ADDED REMOVED FROM ITS LIST AT ANY TIME.

4.1.1.1. MAIN MENU AND GENERAL TOOL BAR

THE ATHLETE'S FILES CAN BE DEALT WITH FROM THE MAIN MENU OR FROM THE **GENERAL TOOL BAR**, WHILE THEIR DATA AND TESTS HAVE TO BE DEALT WITH FROM THE **ATHLETE'S TOOL BAR** (SEE SECTION 4.1.2.).

AS ANY PROGRAM FOR WINDOWS®, EACH WORKING WINDOW HAS ITS AREAS CLEARLY DEFINED:



THE **MAIN MENU** IS WHERE ALL THE AVAILABLE OPTIONS APPEAR, GROUPED IN FIVE CATEGORIES. WHEN WORKING WITH FILES, OPTIONS OF THE MAIN MENU ARE ADDED, DISABLED OR REMOVED AUTOMATICALLY, DEPENDING ON THE SITUATION.

THE **GENERAL TOOL BAR** PROVIDES A QUICK AND INTUITIVE ACCESS TO THE MOST COMMON ACTIONS CARRIED OUT AMONG FILES, IDENTIFIED THROUGH THE BEST-KNOWN ICONS OF ALL THE PROGRAMS FOR WINDOWS®. THERE IS NO DIFFERENCE BETWEEN CARRYING OUT THESE ACTIONS FROM THE MAIN MENU OF FROM THESE BUTTONS.

THE **WORK AREA** IS THE PLACE WHERE ALL THE WINDOWS WILL SHOW.

4.1.1.1.1. "FILE" MENU

IN THE **MAIN MENU**, THE OPTION **"FILE"** SHOWS AN INITIAL MENU WITH THE FOLLOWING OPTIONS:



NEW

THIS OPTION CREATES A NEW EMPTY FILE CORRESPONDING TO AN **ATHLETE**. THE PROGRAM WILL ALWAYS SUGGEST NAMING THE FILE WITH THE ATHLETE'S LAST NAME IN CAPITAL LETTERS, FOLLOWED BY HIS/HER FIRST (AND MIDDLE) NAMES IN SMALL LETTERS, WITH THE **.ATL** EXTENSION, SO AS TO BE IDENTIFIED FAST. HOWEVER, THE USER CAN GIVE THE FILE ANY NAME S/HE WANTS SO AS TO BE ABLE TO IDENTIFY IT AMONG OTHER ATHLETES IN A LIST.

THE FILE NAME WILL IMMEDIATELY APPEAR IN THE TITLE BAR OF THE CORRESPONDING WINDOW, BETWEEN SQUARE BRACKETS, SO THAT THE ATHLETE CAN BE QUICKLY IDENTIFIED AMONG SEVERAL OPEN WINDOWS.



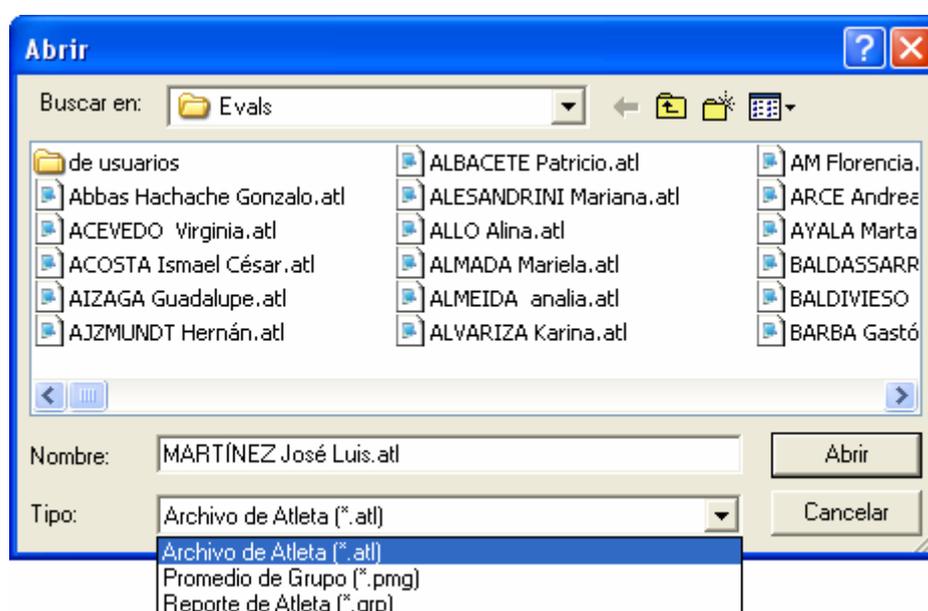
EACH NEW FILE THAT IS CREATED WILL COPY THE SPORTIVE DATA OF THE PREVIOUS ONE IN ORDER TO SAVE TIME AND MAKE THE ENTERING OF A WHOLE TEAM OF SPORTSPEOPLE FASTER.

ALSO, A NEW ATHLETE'S FILE CAN BE GENERATED CLICKING ON THE ICON CORRESPONDING TO BLANK PAGE.



OPEN...

THIS LEADS US TO THE STANDARD DIALOG WINDOW THAT ALLOWS US TO CHOOSE THE FILE(S) WE WANT TO OPEN. **IT ALLOWS FOR MULTIPLE SELECTIONS** SO THAT SEVERAL FILES CAN BE OPENED AT ONCE (FOR EXAMPLE, OPENING A WHOLE TEAM OF PLAYERS AT ONCE). THIS CAN BE DONE IN TWO WAYS: USING THE **SHIFT KEY AND THE CURSORS**, IF THEY ARE FILES APPEARING ONE AFTER THE OTHER; OR KEEPING THE KEY **CONTROL** PRESSED **AND SELECTING THEM INDIVIDUALLY BY CLICKING ON THEM**, IF THEY ARE NOT ONE AFTER THE OTHER IN THE LIST. PRESSING THE CONTROL KEY AND CLICKING AT THE SAME TIME REVERSES THE FILE SELECTION (IT ACTIVATES OR DEACTIVATES THE SELECTION).



THIS DIALOG WINDOW, "OPEN", HAS FOUR BUTTONS TO THE RIGHT OF "SEARCH IN:". THE USE OF EACH OF THEM CAN BE SEEN WHEN LEAVING THE CURSOR ON THE BUTTON FOR A FEW SECONDS. FROM LEFT TO RIGHT, THESE BUTTONS ARE: "GO TO THE LAST FILE OPENED", IT GOES BACK TO THE PREVIOUS PLACE WHERE SEARCH WAS MADE, "GO UP ONE LEVEL", IT GOES UP ONE LEVEL IN THE DIRECTORY TREE STRUCTURE, "CREATE NEW FOLDER", THIS IS FOR CREATING A NEW SUBDIRECTORY, AND "VIEWS", WHICH ALLOWS US TO SEE THE FILE LIST IN DIFFERENT WAYS. WITHIN THESE VIEWS, THE OPTION "DETAILS" LETS US SEE THE FILES INFORMATION. THIS OPTION IS PARTICULARLY USEFUL SINCE WE CAN SORT THE FILES IN AN ASCENDING OR DESCENDING WAY ACCORDING TO ANY CHARACTERISTIC, SIMPLY PRESSING THE HEADING OF THESE FILE VARIABLES: NAME , SIZE, TYPE, DATE MODIFIED, ETC.

IT IS ALSO POSSIBLE TO DELETE THE FILES SELECTED WITHIN THIS WINDOW USING THE KEY "DELETE" IN THE KEYBOARD (AS A SECURITY MEASURE, THE PROGRAM WILL ASK FOR CONFIRMATION BEFORE DELETING THE FILES).





WE CAN ACCESS TO THE SAME DIALOG PRESSING THE BUTTON CORRESPONDING TO THE FOLDER OPENED.

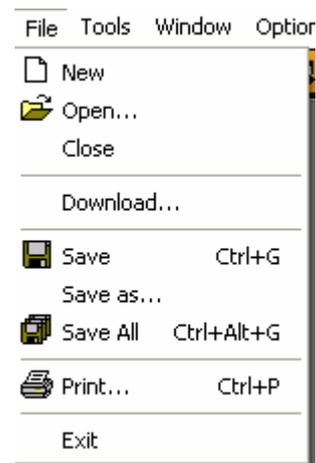
THE WINDOW CAN BE ENLARGED DRAGGING THE MOUSE FROM ITS RIGHT LOWER CORNER SO AS TO BE ABLE TO SEE MORE FILES. THE SAME CAN BE DONE WITH ITS FRAMES.

FROM THIS WINDOW, WE CAN CHOOSE THE TYPE OF FILE WE WANT TO OPEN:

- ATHLETE FILES (.ATL)
- GROUP AVERAGE FILES (.PMG)
- REPORT FILES (.QRP)

THE GRAPHIC FILES CANNOT BE OPENED WITH THIS PROGRAM UNLESS THEY ARE INSERTED WITHIN A REPORT (.QRP). TO OPEN A GRAPHIC FILE USE **PAINT**, WHICH CAN BE FOUND WITHIN THE WINDOWS® ACCESSORIES, OR ANY OTHER PROGRAM FOR EDITING IMAGES.

WHEN OPENING. ONE OF THESE FILES, OR WHEN CREATING A NEW ONE, THE FILE MENU ADDS THE FOLLOWING OPTIONS:



CLOSE

IT CLOSES THE ACTIVE WINDOW, WHICH CAN BE OF ANY TYPE. IF ANY CHANGES HAVE BEEN MADE, IT WILL ASK, BEFORE CLOSING, WHETHER YOU WISH TO SAVE THE CHANGES IN ORDER TO PROTECT THE NEW INFORMATION. OTHERWISE, IT WILL AUTOMATICALLY CLOSE WITHOUT MAKING ANY QUESTIONS. IN CASE OF CLOSING AN ATHLETE'S WINDOW, IT WILL NOT CLOSE THE WINDOWS OF THE GRAPHICS, AVERAGES OR REPORTS RELATED TO THAT ATHLETE.

SAVE

IT SAVES THE FILE CORRESPONDING TO THE ACTIVE WINDOW. IF THE FILE HAS NOT BEEN SAVED YET, IT WILL SHOW THE SAME DIALOG WINDOW AS THE OPTION "SAVE AS ...". THIS MENU OPTION CAN ALSO BE FOUND IN THE ATHLETE'S TOOL BAR, WITH A BUTTON THAT SHOWS A DISKETTE (AS YOU WILL SEE IN [SECTION 4.1.2.](#)).

SAVE AS ...

IT OPENS THE STANDARD DIALOG THAT ALLOWS YOU TO SAVE THE FILE UNDER ANOTHER NAME AND/OR EXTENSION. THIS OPTION IS ALSO ACTIVE FOR THE GRAPHS, ALLOWING TO SAVE THEM UNDER THE **.BMP** FORMAT (BITMAP) OR UNDER THE **.WMF** FORMAT (WINDOWS METAFILE FORMAT) SO AS TO BE ABLE TO ENLARGE THEM WITHOUT LOSING IMAGE QUALITY.

SAVE ALL

IT SAVES **ALL** THE FILES OPENED IN THE WORK AREA. IF THE FILE(S) WAS/WERE OPENED AND CHANGES WERE MADE, IT SAVES IT/THEM IN THE SAME PLACE THEY WERE IN AND WITH THE SAME NAME. IF THE FILE HAS NOT BEEN SAVED YET (NEW FILE) THE DIALOG WINDOW SAVE AS ... WILL APPEAR, WHICH GIVES THE POSSIBILITY OF CHOOSING THE NAME AND LOCATION TO SAVE IT FOR THE FIRST TIME. THIS INVOLVES THE FOUR TYPES OF FILE THE PROGRAM CAN CREATE.

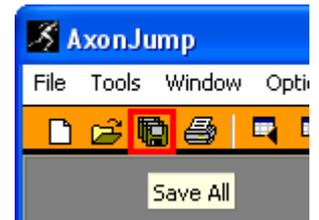
THE BUTTON CORRESPONDING TO THIS OPTION IS THE ICON SHOWING SEVERAL DISKETTES.



PRINT...

HERE THERE ARE THREE OPTIONS:

1. IF THE ACTIVE WINDOW CORRESPONDS TO AN ATHLETE, THIS OPTION WILL TAKE US TO THE PERSONALIZED PRINTING DIALOG WINDOW OF THE REPORT. APART FROM ALL THE STANDARD OPTIONS TO SET UP THE PAGE AND THE PRINTER (MARGINS, PAPER SIZE, ETC.), IT ALLOWS SELECTING, VIA MULTIPLE OPTIONS, THE TESTS WE WISH TO INCLUDE IN THE PRINTED REPORT.



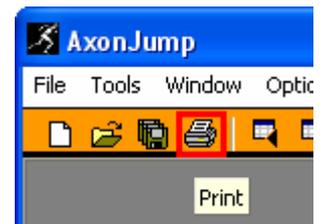
IT ALSO ALLOWS COMBINING THE REPORT OF THE DATA OBTAINED IN THE TESTS WITH THE GRAPHS WE HAVE CREATED, AS WELL AS ADDING A COMMENT AT THE END OF THE REPORT SO AS TO PERSONALIZE EVEN MORE THE RESULT OF THE TEST OBTAINED. BESIDES, THE PERSON ASSESSING CAN INCLUDE HIS/HER PERSONAL DATA (SIGNATURE) AT THE END OF THE REPORT.

TO SEE THE PRINTING OF REPORTS IN DETAIL GO TO [SECTION 4.6](#).

2. IF THE ACTIVE WINDOW CORRESPONDS TO A GRAPH, IT WILL LEAD US TO A FOLLOWING DIALOG WINDOW THAT ALLOWS PREVIEWING AND PRINTING JUST THE GRAPH. TO SEE THE PRINTING OF GRAPHS IN DETAIL GO TO [SECTION 4.4.9](#).

3. IF THE ACTIVE WINDOW CORRESPONDS TO AN AVERAGE, THIS OPTION WILL LEAD US TO A DIALOG WINDOW THAT ALLOWS CHANGING THE SIGNATURE AND PREVIEWING THE PRINTING.

TO SEE THE PRINTING OF GRAPHS IN DETAIL GO TO [SECTION 4.5](#).



WE CAN ALSO ACCESS TO THIS PRINTING DIALOG WITH THE BUTTON "PRINT" FROM THE GENERAL TOOL BAR AS WELL AS FROM THE ATHLETE'S WINDOW.

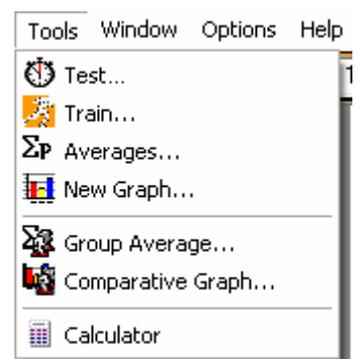
EXIT

IT EXITS FROM THE AXON JUMP PROGRAM. TO SAVE THE DATA THAT HAVE BEEN MODIFIED, IT WILL FIRST ASK WHETHER YOU WISH TO SAVE THE CHANGES OF EACH OF THE OPEN WINDOWS THAT HAVE HAD ANY MODIFICATIONS. WE CAN ALSO EXIT FROM THE PROGRAM AT ANY TIME CLICKING ON THE CROSS IN THE UPPER RIGHT CORNER OF THE MAIN WINDOW.

4.1.1.2. "TOOLS" MENU

IN THE **MAIN MENU**, WHEN AN ATHLETE WINDOW IS ACTIVE, THE OPTION "**TOOLS**" SHOWS A MENU WITH THE FOLLOWING OPTIONS:

THIS MENU GROUPS THE TOOLS WHERE ALL THE SOFTWARE POWER IS FOUND. IT IS DIVIDED INTO TWO PARTS: THE UPPER PART, CORRESPONDING TO THE **SPECIAL TOOLS** OF THE ATHLETE, AND THE LOWER PART, CORRESPONDING TO THE **GENERAL TOOLS**.



THE SPECIAL TOOLS DO NOT APPEAR AT FIRST OR WHEN THE ACTIVE WINDOW IS NOT AN ATHLETE'S WINDOW. DETAILED EXPLANATIONS ARE GIVEN BELOW, IN SECTIONS ESPECIALLY DEVOTED TO EACH OF THESE TOOLS. THIS IS BECAUSE IN ORDER TO UNDERSTAND THEM, THE USER NEEDS TO ACQUIRE SOME BASIC KNOWLEDGE ABOUT THE ATHLETE'S FILE, WHICH IS EXPLAINED FURTHER ON.

TEST...



THIS OPTION LEADS US TO A DIALOG WINDOW OF THE ATHLETE'S TEST, WHERE ALL THE AVAILABLE PROTOCOLS ARE SHOWN. THE RESULTS OF THE TEST ARE CHRONOLOGICALLY RECORDED WITHIN EACH ATHLETE'S DATA, AND THEY CAN BE GRAPHED AND AVERAGED, AMONG OTHER THINGS. IT IS THE CHRONOMETER ICON IN THE ATHLETE'S TOOLS.



IT IS EXPLAINED IN DETAIL IN [SECTION 4.2.](#)

TRAIN...

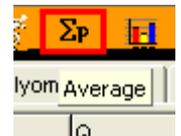
THIS OPTION LEADS US TO THE DIALOG WINDOW OF THE ATHLETE'S TRAINING, WHERE THE VOLUME, INTENSITY AND PAUSES DURING TRAINING BASED ON CONTINUOUS JUMPS CAN BE VARIED. THE SCREEN SHOWS REAL TIME INFORMATION OF EACH JUMP, GIVING THE ATHLETE VISUAL FEEDBACK APART FROM SOUND INFORMATION. THESE TRAINING SESSIONS CAN BE RECORDED AND GRAPHED. IT IS THE ICON SHOWING AN ATHLETE RUNNING IN THE ATHLETE'S TOOLS.



IT IS EXPLAINED IN DETAIL IN [SECTION 4.3.](#)

AVERAGES...

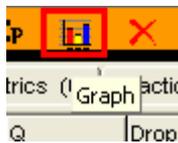
THIS OPTION LEADS US TO THE DIALOG WINDOW OF THE ATHLETE'S TEST AVERAGE, WHERE THE TEST OF SINGLE JUMPS, SPEED OR PLYOMETRICS OF UPPER LIMBS CAN BE AVERAGED. THE OBTAINED AVERAGE RESULT IS ADDED TO THE LIST OF TEST CARRIED OUT. IT IS THE ICON SHOWING A SUMMARY SYMBOL IN THE ATHLETE'S TOOLS.



IT IS EXPLAINED IN DETAIL IN [SECTION 4.2.7.](#)

NEW GRAPH ...

THIS OPTION LEADS US TO A DIALOG WINDOW OF GRAPHICS DATA SELECTION. THERE ARE SEVERAL TYPES OF GRAPHS: WITHIN SINGLE JUMPS, EVOLUTION AND DROP JUMPS CAN BE GRAPHED. THE CONTINUOUS JUMPS, CHRONOMETER AND FREQUENCY CAN BE GRAPHED BY COMPLETE SERIES, WHEREAS IN SPEED AND PLYOMETRICS OF UPPER LIMBS ITS EVOLUTION CAN BE GRAPHED. THE TRAINING SESSIONS CAN ALSO BE GRAPHED. THE SOFTWARE DECIDES ON THE TYPE OF GRAPH ACCORDING TO THE SHEET OF THE TYPE OF TEST WHICH IS ACTIVE AT THAT MOMENT.



IT IS THE ICON WITH THE GRAPH SYMBOL IN THE ATHLETE'S TOOLS.

IT IS EXPLAINED IN DETAIL IN [SECTION 4.4.](#)

GROUP AVERAGE...

THIS OPTION LEADS US TO A DIALOG WINDOW OF THE TYPE OF DATA SELECTION TO AVERAGE TEST AMONG DIFFERENT ATHLETES. ATHLETES CAN ONLY BE COMPARED THROUGH TEST WITH A SOLE VARIABLE (SINGLE JUMPS, SPEED AND PLYOMETRICS OF UPPER LIMBS). THIS PROCEDURE WILL LEAD TO THE CREATION OF A .PMG FILE. THIS FILE CONTAINS THE LIST OF THE ATHLETES SELECTED TOGETHER WITH THEIR VARIABLES, AVERAGE AND STANDARD DEVIATION OF THE TEAM. IT IS THE ICON SHOWING THE SUMMARY SYMBOL WITH TWO PEOPLE IN THE GENERAL TOOLS.



IT IS EXPLAINED IN DETAIL IN [SECTION 4.5.](#)

COMPARATIVE GRAPH...

THIS OPTION LEADS US TO A DIALOG WINDOW OF THE TYPE OF DATA SELECTION TO MAKE A GRAPH OF THE DIFFERENT ATHLETES. GRAPHS CAN ONLY BE MADE TO COMPARE ATHLETES THROUGH TEST WITH A SOLE VARIABLE (SINGLE JUMPS, SPEED AND PLYOMETRICS OF UPPER LIMBS). THIS PROCEDURE WILL LEAD TO THE CREATION OF A .BMP OR WMF GRAPHIC FILE.

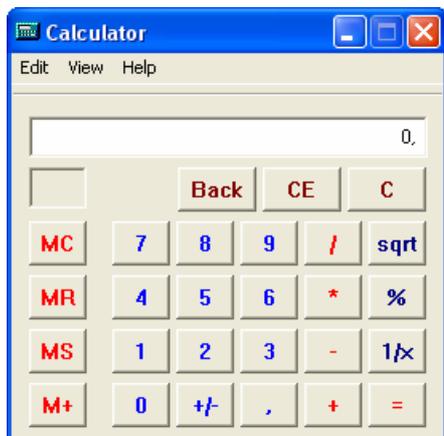


IT IS THE ICON SHOWING THE GRAPH SYMBOL WITH TWO PEOPLE IN THE GENERAL TOOLS.

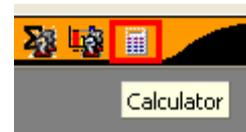
IT IS EXPLAINED IN DETAIL IN [SECTION 4.4.6.](#)



CALCULATOR...

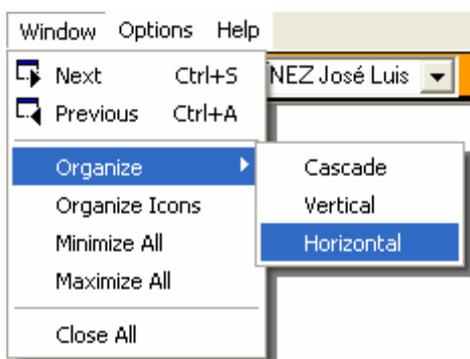


THIS OPTION ALLOWS ACCESSING THE WINDOWS® CALCULATOR TO DO AUXILIARY CALCULATIONS USING THE “VIEW” OPTION. THIS CALCULATOR CAN BE REGULAR OR SCIENTIFIC, ACCORDING TO THE USER’S NEED. EITHER THE MOUSE OR THE KEYPAD IN YOUR PC’S KEYBOARD CAN BE USED. IT IS THE ICON SHOWING A CALCULATOR IN THE GENERAL TOOLS.



4.1.1.3. "WINDOW" MENU

IN THE MAIN MENU, THE OPTION “WINDOW” SHOWS A MENU WITH THE FOLLOWING OPTIONS:



NEXT AND PREVIOUS:

THESE OPTIONS LEAD US TO THE FOLLOWING OR PREVIOUS WINDOW RESPECTIVELY, IN THE ORDER THEY WERE LOADED OR CREATED (THEY CAN BE WINDOWS OF AVERAGES, SPORTSPEOPLE OR GRAPHS CREATED). IT IS ALSO POSSIBLE TO DO THIS JUST PRESSING THE BUTTON “NEXT WINDOW” OR “PREVIOUS WINDOW” IN THE TOOL BAR.



EACH ATHLETE CAN ALSO BE SELECTED FROM THE LIST IN ALPHABETICAL ORDER THAT IS FOUND TO THE RIGHT OF SUCH BUTTONS. THESE TOOLS MAKE THE TEST OF SEVERAL SPORTSPEOPLE FASTER, FOR EXAMPLE, WHEN A WHOLE TEAM HAS TO BE ASSESSED. FROM THE TEST WINDOW, YOU CAN DO THE SAME, AIMING AT KEEPING IN THE WINDOW.



THE LIST IN ALPHABETICAL ORDER IS UPDATED IF THE ATHLETE'S WINDOW IS NOT MINIMIZED. THE BUTTONS "NEXT" AND "PREVIOUS" TOGGLE THE WINDOWS IN THE ORDER THEY HAVE BEEN CREATED.



ORGANIZE:

THIS OPTION LETS US ORGANIZE THE WORK AREA SO THAT ALL THE WINDOWS REMAIN VISIBLE AT FIRST SIGHT. THE THREE OPTIONS ARE: **CASCADE**, WHICH ORGANIZES ALL THE WINDOWS OPENED OVERLAPPING THEM SO THAT THE TITLE BAR OF EACH OF THEM CAN BE SEEN; **TILE VERTICALLY**, WHICH ORGANIZES THEM VERTICALLY IN A TILE AND **TILE HORIZONTALLY**, WHICH ORGANIZES THEM HORIZONTALLY IN A TILE.

ORGANIZE ICONS:

IF THEY ARE MINIMIZED, IT PLACES THEM ALL AT THE BOTTOM OF THE SCREEN, ORGANIZING THEM.

MINIMIZE ALL:

IT TAKES ALL OF THEM TO THE BOTTOM OF THE SCREEN, MINIMIZING THEM.

MAXIMIZE ALL:

IT OPENS ALL THE WINDOWS AT ITS MAXIMUM POSSIBLE SIZE, ONE BEHIND THE OTHER ONE.

CLOSE ALL:

IT CLOSES ALL THE WINDOWS, ASKING IF CHANGES WISH TO BE SAVED ONLY IN THOSE WINDOWS WHERE MODIFICATIONS HAVE TAKEN PLACE.

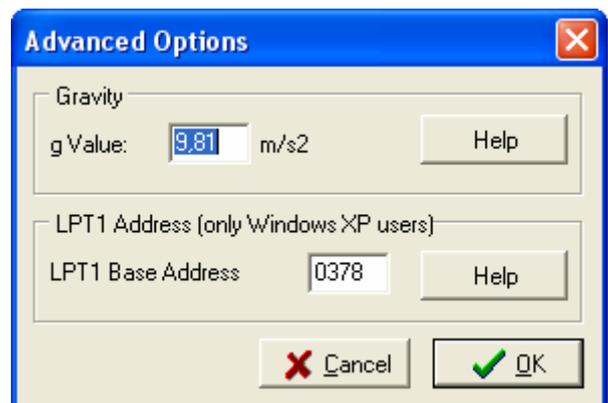
4.1.1.4. "OPTIONS" MENU

IN THE MAIN MENU, THE OPTION "OPTIONS" SHOWS THE FOLLOWING MENU:



ADVANCED OPTIONS... :

FROM THIS WINDOW IT IS POSSIBLE TO CHANGE SOME IMPORTANT POINTS ABOUT THE WAY THE SOFTWARE WORKS.



GRAVITY

IT IS POSSIBLE TO VARY THE GRAVITY "G" NUMBER, ACCORDING TO THE CITY WHERE THE TEST IS TAKING PLACE. THIS NUMBER TAKES PART IN THE CALCULATION OF THE HEIGHT JUMPED AND OF THE TAKE-OFF SPEED. IT IS WORTH CHANGING WHEN THE TEST IS CARRIED OUT IN A CITY WITH A CONSIDERABLE ALTITUDE ABOVE SEA LEVEL, SINCE THE EARTH ATTRACTS OBJECTS IN A LESSER WAY AND THE JUMP HEIGHTS ARE SLIGHTLY GREATER. YOU SHOULD GET THE DOMESTIC INFORMATION ABOUT THIS NUMBER OR FIND IT OUT IN THE INTERNET. THE SYSTEM WILL USE THE GRAVITY NUMBER FOR SEA LEVEL AND 45° LATITUDE UNLESS CHANGED. THE NUMBERS OF THESE TESTS WILL ADD TO



THE LIST AS IF ALL OF THEM WERE CARRIED OUT UNDER THE SAME CIRCUMSTANCES. IT IS WORTH COMMENTING ON IT IN THE OBSERVATIONS SECTION.

LPT1 ADDRESS

IF THERE ARE PROBLEMS DETECTING THE MAT (THE PROGRAM HAS A SELF-DETECTION SYSTEM OF THE PORT DIRECTION), IT IS POSSIBLE TO CHANGE IT FROM THE LPT1 OPTION. THIS CAN BE USEFUL IN NON STANDARD NOTEBOOKS. THE "HELP" BUTTON GIVES INFORMATION ABOUT HOW TO DO THIS SAFELY. **DO NOT TOUCH IT IF THE SYSTEM IS WORKING PROPERLY!**

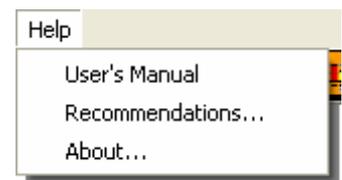


LANGUAGE:

IT IS POSSIBLE TO CHANGE THE SOFTWARE LANGUAGE HERE.

4.1.1.5. "HELP" MENU

IN THE MAIN MENU, THE "HELP" OPTION SHOWS A MENU WITH THE FOLLOWING CHOICES:



USER'S MANUAL:

THIS OPTION LEADS TO OPENING THIS MANUAL. THE ADOBE ADOBE READER® SHOULD BE PREVIOUSLY INSTALLED. IT IS SUPPLIED IN THE SAME CD OF THE AXON JUMP PROGRAM. YOU CAN ALSO DOWNLOAD THE LAST VERSION OF THIS PROGRAM CLICKING ON THE LINK WE HAVE IN OUR SITE (OPTION "LINKS").

RECOMMENDATIONS...:

IN THIS OPTION YOU WILL FIND SOME USEFUL TIPS COMING FROM OUR USERS' FREQUENTLY ASKED QUESTIONS. IT IS ADVISABLE TO READ THEM SO AS TO BE UP TO DATE AS REGARDS DETAILS OF THE VERSION AVAILABLE.

ABOUT...:

THIS OPTION GIVES INFORMATION ABOUT THE PROGRAM VERSION AND HOW TO CONTACT **AXON BIOINGENIERÍA DEPORTIVA**. CHECK THE DATE IF YOU WISH TO UPDATE THE PROGRAM. BEFORE CONSULTING, PLEASE READ THIS INSTRUCTIONS MANUAL AND CHECK YOU HAVE THE LATEST AVAILABLE VERSION OF THE PROGRAM.

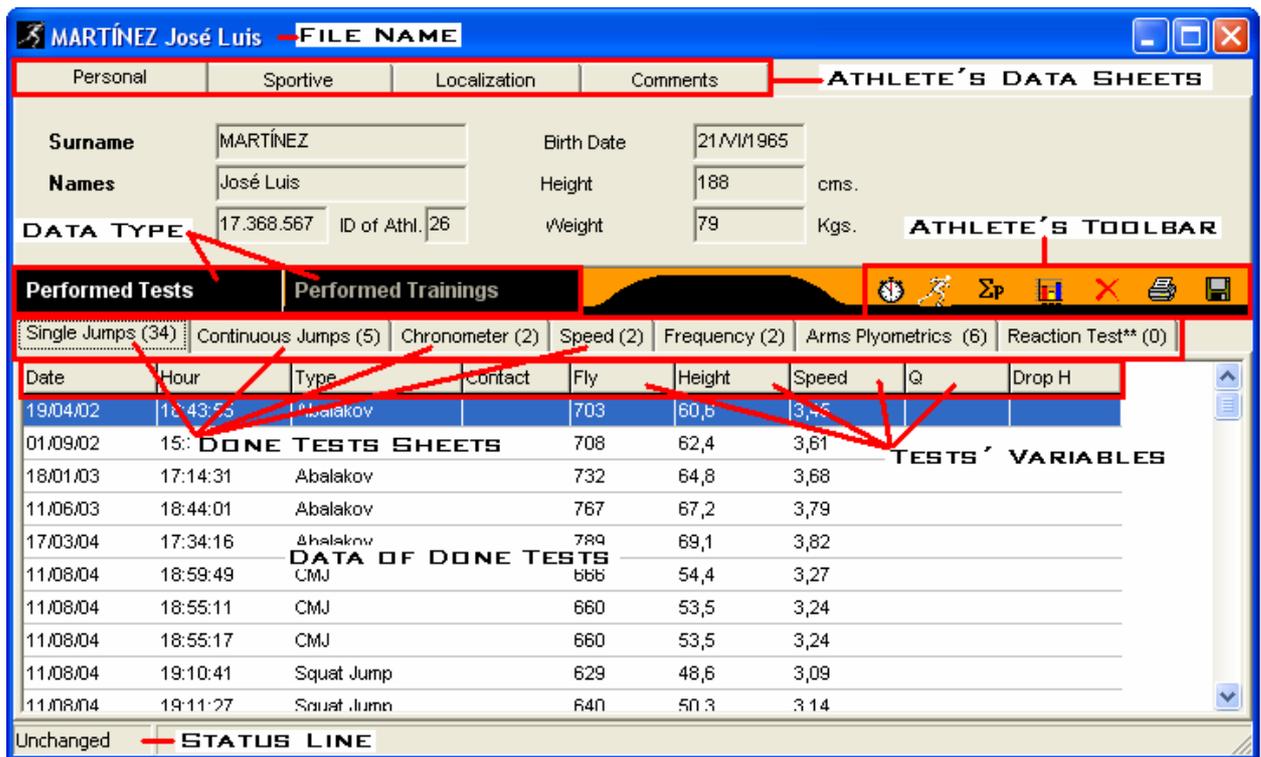
4.1.2. THE ATHLETE'S FILE AND ITS TOOLBAR

THE ATHLETE'S FILE IS THE CENTRAL FILE TYPE CREATED BY THE SYSTEM. EACH OF THESE FILES HAS A TITLE BAR WITH THE NAME IT HAS BEEN GIVEN, WHICH WILL BE THE ATHLETE'S LAST AND FIRST NAMES, UNLESS YOU WISH TO GIVE IT ANOTHER NAME.

THE ATHLETE'S FILE DOES NOT ONLY CONTAIN INFORMATION ABOUT THE TEST AND TRAINING CARRIED OUT, BUT ALSO THERE ARE **FOUR GROUPS OF DATA** THAT CAN BE ENTERED TO INDIVIDUALIZE AND SPECIFY THE ATHLETE'S ACTIVITY MORE IN DETAIL: HIS/HER **PERSONAL AND SPORTIVE INFORMATION**, **CONTACT** AND **COMMENTS**, ORGANIZED IN TABS AS IN A NOTEPAD. ALL THE ATHLETE'S DATA CAN BE EDITED JUST CLICKING ON THE MOUSE. THEY CAN BE MOVED FROM ONE FIELD TO THE NEXT USING EITHER THE **TAB** OR THE **ENTER** KEY. ON THE OTHER HAND, BY PRESSING BOTH THE **SHIFT + TAB** KEYS SIMULTANEOUSLY, THE PREVIOUS FIELD IS ACTIVATED. TO MOVE ONE FROM ONE SHEET OF THE NOTEPAD TO THE NEXT, ACTIVATE THE TAB OF THE CURRENT SHEET (WITH THE TAB KEY UNTIL YOU ARE THERE) AND CLICK ON THE RIGHT BUTTON OF THE MOUSE. THE LEFT BUTTON OF THE CURSOR ACTIVATES THE PREVIOUS SHEET.



EACH ATHLETE'S FILE IS SHOWN IN A WINDOW WITH THE FOLLOWING AREAS:



ATHLETE'S DATA SHEETS

ATHLETE'S TOOLBAR

TESTS' VARIABLES

Date	Hour	Type	Contact	Fly	Height	Speed	Q	Drop H
19/04/02	12:43:53	Abalakov		703	60,8	3,15		
01/09/02	15:00:00	Abalakov		708	62,4	3,61		
18/01/03	17:14:31	Abalakov		732	64,8	3,68		
11/06/03	18:44:01	Abalakov		767	67,2	3,79		
17/03/04	17:34:16	Abalakov		789	69,1	3,82		
11/08/04	18:59:49	CMJ		666	54,4	3,27		
11/08/04	18:55:11	CMJ		660	53,5	3,24		
11/08/04	18:55:17	CMJ		660	53,5	3,24		
11/08/04	19:10:41	Squat Jump		629	48,6	3,09		
11/08/04	19:11:27	Squat Jump		640	50,3	3,14		

Unchanged **STATUS LINE**

THE ATHLETE'S DATA ARE GROUPED IN FOUR SHEETS WITH THE FOLLOWING CONTENTS:

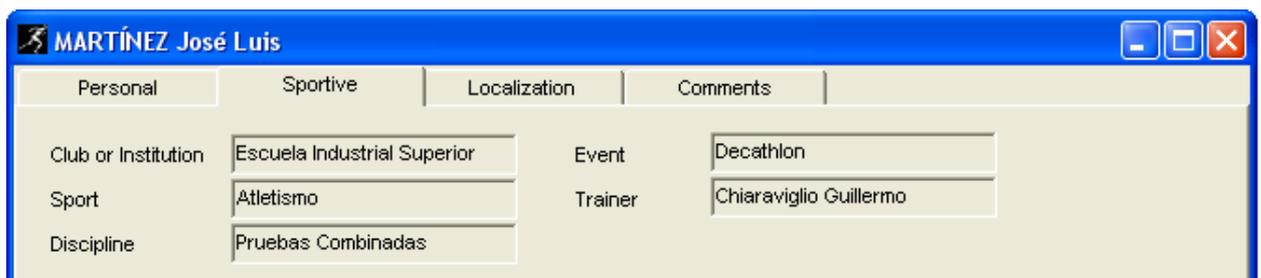
THE **PERSONAL INFORMATION** INVOLVES SOME DATA TO INDIVIDUALIZE THE ATHLETE, SUCH AS DATE OF BIRTH, ID NUMBER AND SOME ANTHROPOLOGICAL MEASURES SUCH AS HEIGHT IN CENTIMETERS AND WEIGHT IN KILOGRAMS.



PERSONAL INFORMATION

Surname: MARTÍNEZ
 Names: José Luis
 Birth Date: 21/VI/1965
 Height: 188 cms.
 ID Number: 17.368.567
 ID of Athl.: 26
 Weight: 79 Kgs.

THE **SPORTIVE INFORMATION** HAS TO DO WITH THE SPORTIVE ACTIVITY THE ATHLETE PERFORMS. THE SPORT INVOLVES THE MAJOR FIELD AND THE DISCIPLINE INVOLVES, IN TURN, THE MAJOR FIELD, FOR EXAMPLE ATHLETICS/ JUMPS/LONG JUMP, OR SOCCER/DEFENDER/2.



SPORTIVE INFORMATION

Club or Institution: Escuela Industrial Superior
 Event: Decathlon
 Sport: Atletismo
 Trainer: Chiaraviglio Guillermo
 Discipline: Pruebas Combinadas

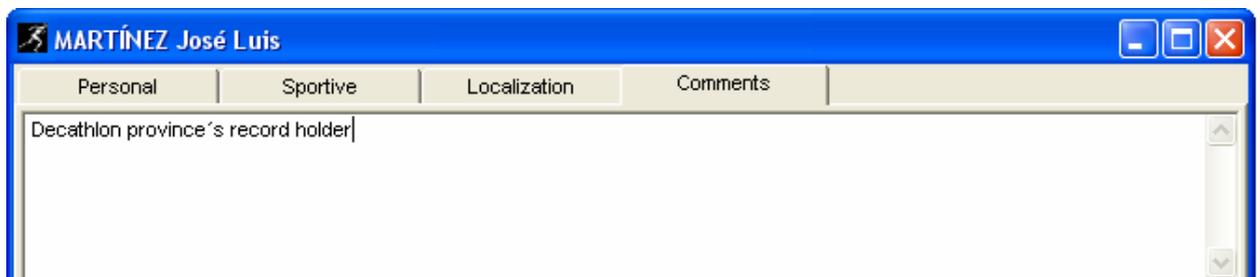


THE **LOCALIZATION DATA** HAVE TO DO WITH THE DIFFERENT WAYS TO CONTACT THE ATHLETE.



Personal	Sportive	Localization	Comments
Address	Espora 263	Country	Argentina
Location	Santa Fe	e-mail	coto@yahoo.com
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FINALLY, THE **COMMENTS AREA** IS A “FREE TEXT AREA” WHERE YOU CAN ENTER ANY USEFUL DATA SUCH AS HIS/HER RECORDS, BEST SCORES, LESIONS, WAYS OF TRAINING, SPECIAL CONDITIONS OF THE TEST CARRIED OUT ON A PARTICULAR DATE, OTHER SPORTS, ETC.



THE **TESTS PERFORMED** ARE SAVED IN CHRONOLOGICAL ORDER IN A NOTEPAD WITH SEVEN SHEETS CORRESPONDING TO THE TYPE OF TEST. THESE ARE: **SINGLE JUMPS**, **CONTINUOUS JUMPS**, **CHRONOMETER**, **SPEED**, **FREQUENCY**, **ARMS PLYOMETRICS**, AND **REACTION TEST** (JUST WITH AXON CPU)**. WITHIN EACH OF THESE SHEETS, THE RESULTS ARE SPECIFIED IN DETAIL, IN COLUMNS ACCORDING TO THE DIFFERENT VARIABLES OBTAINED IN THE DIFFERENT TESTS.

THE **TRAINING SESSIONS PERFORMED** ARE SAVED IN THE SAME WAY IN A NOTEPAD WITH A SINGLE SHEET, WHERE THESE DATA ARE CHRONOLOGICALLY SAVED.

THE **ATHLETE'S TOOLBAR** HAS THE FOLLOWING BUTTONS:

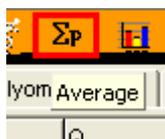


TESTS: IT OPENS THE TESTING DIALOG WINDOW, WHICH SHOWS ALL THE POSSIBLE TESTS, IN SEVEN GROUPS: **SINGLE JUMPS**, **CONTINUOUS JUMPS**, **CHRONOMETER**, **SPEED**, **FREQUENCY** AND **ARMS PLYOMETRICS (OR UPPER LIMBS)**. IF THE MAT IS STILL NOT CONNECTED WHEN THE CHOICE IS MADE, THE SYSTEM WILL REMIND US OF CONNECTING THE MAT THROUGH ITS CONNECTOR. ALL THE DETAILS REGARDING THIS OPTION CAN BE FOUND IN [SECTION 4.2](#). OF THIS MANUAL.

TRAIN: IT OPENS THE DIALOG WINDOW THAT CREATES TRAINING SESSIONS. WITH THIS TOOL, IT IS POSSIBLE TO DESIGN AND CHECK PLYOMETRIC SESSIONS OF CONTINUOUS JUMPS, USING THE VISUAL FEEDBACK WITH THE ATHLETE WHILE S/HE PERFORMS THE SESSION. APART FROM HIS/HER JUMP BY JUMP RECORD, IT AUTOMATICALLY CREATES AVERAGES BY SERIES AND BY SESSION. AMONG OTHER FEATURES, IT IS POSSIBLE TO VARY THE VOLUME, INTENSITY AND PAUSES OF THE WHOLE SESSION. THE PROGRAM COMMUNICATES WITH THE ATHLETE WHEN FINISHING AND BEGINNING THE SERIES VIA THE SPEAKERS OF THE SYSTEM. A SOUND CARD AND SPEAKERS NEED TO BE CONNECTED IN ORDER TO BE

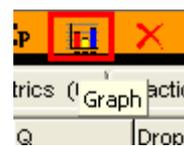


ABLE TO HEAR THOSE SIGNALS. ALL THE DETAILS REGARDING THIS OPTION CAN BE FOUND IN [SECTION 4.3.](#) OF THIS MANUAL.

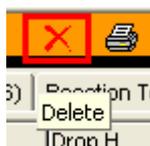


AVERAGE: IT OPENS THE AVERAGING DIALOG WINDOW. THIS TOOL CREATES AVERAGES OF THE VALUES OBTAINED IN DIFFERENT TEST SESSIONS OF A SINGLE VALUE OF THE SAME TYPE IN ORDER TO GET A REPRESENTATIVE VALUE OF ONE SESSION OR TEST GROUP. THIS VALUE WILL BE ADDED TO THE TEST LIST AS ONE MORE, WITH THE DATE WHEN IT WAS CREATED. HOW TO USE IT IS EXPLAINED IN DETAIL IN [SECTION 4.2.7.](#) OF THIS MANUAL.

GRAPHS: IT OPENS A DIALOG WINDOW THAT ALLOWS CHOOSING AMONG THE TYPES OF GRAPHS AVAILABLE FOR THE SAME ATHLETE: **EVOLUTION AND DROP JUMPS** IN SINGLE JUMPS, **CONTINUOUS JUMPS, CHRONOMETER, EVOLUTION OF SPEED, FREQUENCY AND EVOLUTION OF ARMS PLYOMETRICS.** THE WINDOW OPENS IN CASE THE USER HAS TO MAKE ANY KIND OF DECISION. THE PROGRAM WILL DECIDE FIRST, BASED ON THE ACTIVE SHEET IN THE TEST WINDOW. IN [SECTION 4.4.](#) OF THIS MANUAL YOU CAN SEE HOW TO USE IT. THIS OPTION IS DIFFERENT FROM THE COMPARATIVE GRAPH OF THE GENERAL TOOLS SINCE THE DATA TO GRAPH BELONG TO THE SAME ATHLETE. IN [SECTION 4.4.](#) OF THIS MANUAL, YOU CAN SEE HOW TO USE IT.



THESE PREVIOUS FOUR OPTIONS CAN ALSO BE FOUND GROUPED IN THE MAIN MENU IN THE **"TOOLS"** OPTION. EACH OF THESE HAS THE SAME IMAGE AS THE ATHLETE'S TOOLBAR.

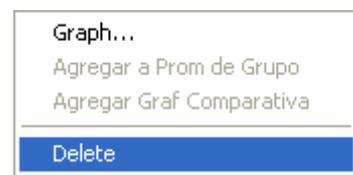


DELETE TEST: TO REMOVE AN UNWANTED TEST DATA, YOU JUST HAVE TO SELECT IT CLICKING WITH THE MOUSE AND THEN ON THE **DELETE** BUTTON. FOR CONTINUOUS JUMPS, CHRONOMETER AND FREQUENCY, THE SELECTION INVOLVES THE WHOLE TEST, THAT IS TO SAY, YOU CANNOT SELECT ONE JUMP OR ONE PART IN ORDER TO DELETE SOME OF THEM, BUT ALL THE JUMPS OR PARTS CORRESPONDING TO THE SAME ATTEMPT AT THE SAME TIME WILL BE DELETED.

THEN, AS A SAFETY MEASURE, A NEW DIALOG WINDOW WILL ASK FOR CONFIRMATION TO DEFINITELY DELETE THE DATA SELECTED.



THE TEST INFORMATION CAN ALSO BE DELETED CLICKING ON THE RIGHT BUTTON OF THE MOUSE ON THE TEST PREVIOUSLY SELECTED AND CHOOSING THE **"REMOVE SELECTED ITEMS"** BUTTON. THE AVERAGES CREATED CAN BE DELETED IN THE SAME WAY, AS IF THEY WERE ANOTHER TEST SESSION.



PRINT: IT LEADS TO A DIALOG WINDOW OF CREATION OF THE ATHLETE'S REPORT, WHERE IT IS POSSIBLE TO SELECT THE TESTS AND GRAPHS TO PRINT. THIS OPTION CAN BE STUDIED IN DETAIL IN [SECTION 4.6.](#) OF THIS MANUAL.

SAVE: THIS BUTTON SAVES THE FILE WITH THE ORIGINAL NAME AND WHERE IT WAS OPENED. IF THE FILE HAS NOT BEEN SAVED YET (IN THE CASE OF A NEW FILE), THE DIALOG WINDOW "SAVE AS ..." WILL APPEAR, GIVING THE POSSIBILITY TO CHOOSE THE NAME AND FOLDER TO SAVE IT IN FOR THE FIRST TIME.



THE **STATUS LINE** OF THE ATHLETE'S WINDOW GIVES INFORMATION ABOUT THE STATE OF THE FILE, FOR EXAMPLE, IF IT HAS BEEN MODIFIED OR IF HAS NOT HAD ANY CHANGES SINCE IT WAS OPENED OR SAVED FOR THE LAST TIME.

4.2. TESTING: GENERAL FEATURES TO TAKE INTO ACCOUNT

FOR THE TEST TO BE RELIABLE, **ALL THE JUMPS HAVE TO BE PERFORMED TO THE MAXIMUM OF THE ATHLETE'S POSSIBILITIES**. THEREFORE, IT IS COMMON THAT THE PERSON ASSESSING WILL EXPLAIN HIS/HER **INSTRUCTIONS** CLEARLY, CORRECTLY AND SYNTHETICALLY, AND THAT S/HE ENCOURAGES THE ATHLETE DURING THE WHOLE ASSESSING PROCESS. THE INFORMATION ABOUT THE HEIGHT JUMPED (OR A LOOP LAP TIME OR THE SPEED STARTING IN A RUNNING CONDITION, ETC.) IS GOOD ENCOURAGEMENT IN MOST CASES. A PROPER WARM-UP IS OBVIOUSLY ESSENTIAL FOR A RELIABLE TEST SESSION WITH NO RISK OF LESIONS, AS WELL AS ENOUGH PAUSES BETWEEN ONE ATTEMPT AND THE NEXT, WITHOUT STOPPING MOTION, FOR EXAMPLE, WITH FLEXIBILITY OR STRETCHING EXERCISES. IT IS AMAZING HOW MUCH AN ATHLETE CAN IMPROVE WHEN STRETCHING THE MUSCULAR GROUPS INVOLVED IN THE TEST BETWEEN ONE ATTEMPT AND THE OTHER.

THE ATHLETE MUST BE **PERFECTLY HEALTHY AND FIT**, SINCE THE TEST PERFORMED IN PAIN OR CARRIED OUT HAVING CERTAIN PATHOLOGIES OR LESIONS IS NOT A MAXIMUM TEST, AND THEREFORE, IT DOES NOT SERVE ITS PURPOSE AS A COMPARISON PARAMETER. BESIDES, THE ATHLETE RUNS THE RISK OF WORSENING THE LESION OR HIS/HER HEALTH. THE TRAINING PERIOD S/HE IS IN HAS TO BE TAKEN INTO ACCOUNT, TOO, AND ALSO THE LOAD BORNE IN PREVIOUS DAYS INCLUDING THE DAY OF THE TEST. FOR EXAMPLE, AN TEST SESSION AFTER AN INTENSE AEROBICS WORKOUT WOULD NOT BE RELIABLE, OR ANY OTHER CARRIED OUT AFTER A MAXIMUM LOAD SQUATS TEST. IN THESE CASES, IT IS USEFUL TO RECORD IN DETAIL THE SPECIAL CONDITIONS UNDER WHICH THE TEST WAS CARRIED OUT.



ANOTHER FACTOR TO TAKE INTO ACCOUNT IS THE SO CALLED "**INDIVIDUAL LEARNING TIME**", WHICH IS THE TIME THE ATHLETE NEEDS TO COMPLETELY MASTER THE TECHNIQUE OF THE SPORT MOVEMENT. IT IS VERY COMMON FOR THE ATHLETE TO MAKE SEVERAL JUMPS BEFORE REACHING HIS/HER MAXIMUM OUTPUT, ABOVE ALL, IN THE FIRST TEST. THIS INDIVIDUAL LEARNING TIME DIFFERS FROM ONE PERSON TO ANOTHER AND IT SHOULD BE RESPECTED. IT IS THE ASSESSING PERSON'S RESPONSIBILITY TO OBTAIN EACH ATHLETE'S MAXIMUM OUTPUT IN EACH TEST.

ANOTHER DETAIL TO TAKE INTO ACCOUNT IS THE **NUMBER OF ATTEMPTS** TO SAVE. BEAR IN MIND THAT THE BIGGER THE SAMPLE OF VALID ATTEMPTS, THE MORE REPRESENTATIVE IT WILL BE OF THE MECHANICAL PERFORMANCE THE ATHLETE HAS AT THE TIME OF THE TEST. HOWEVER, ONCE THE SAMPLE OF ATTEMPTS HAS BEEN SELECTED, WE SUGGEST DELETING THE LOWEST ATTEMPTS AND LEAVING JUST THE BEST THREE OR FOUR OF EACH TYPE IN EACH TEST SESSION. IT WOULD BE CORRECT TO DELETE ANY DATA THAT FOR SOME REASON MAY BE WAY ABOVE OR BELOW THE AVERAGE. THIS WILL LET US OBTAIN AVERAGES RELIABLY. THE NUMBER OF ATTEMPTS SHOULD NOT BE EXCESSIVE, EITHER, SINCE THE ATHLETE WILL FEEL FATIGUE SYMPTOMS AT A SPECIFIC TIME RELATED TO HIS/HER PHYSICAL STATE. IT IS THE ASSESSING PERSON'S TASK, DUE TO HIS/HER EXPERIENCE, TO DETERMINE HOW MANY ATTEMPTS REPRESENT THE ATHLETE'S FAITHFUL SAMPLE. A VALID CRITERION IS TO REPLACE THIS GROUP OF SELECTED JUMPS BY ITS AVERAGE, AND REMOVE THE JUMPS. THIS WILL ONLY BE USEFUL IF THE AVERAGE IS CALCULATED ON THE SAME DAY THE TEST IS CARRIED OUT.

THE **JUMP TECHNIQUE** IS ALSO A KEY FACTOR. IF THE JUMP IS MISTAKENLY PERFORMED, IT WILL NOT BE POSSIBLE TO COMPARE IT WITH ANY OTHER PERFORMED UNDER DIFFERENT CONDITIONS. A KEY POINT TO CHECK IS THE LANDING: AT THE TOUCH DOWN



MOMENT, THE ATHLETE HAS TO LAND ON HIS/HER FOREFEET, AND WITH HIS/HER KNEES AND HIPS PRACTICALLY EXTENDED. THIS IS DUE TO THE FACT THAT LANDING WITH THE KNEES VERY MUCH FLEXED INCREASES THE FLIGHT TIME, AND THEREFORE, THE JUMP HEIGHT CALCULATED WILL ALSO INCREASE. TO ACHIEVE THIS, MANY COACHES ASK FOR A SECOND JUMP AFTER THE LANDING. IN THIS WAY, IT IS DIFFICULT TO LAND IN ANOTHER WAY.

THE MAIN IDEA IS THAT THE ATHLETE'S GRAVITY CENTER POSITION WHEN TAKING OFF AND TOUCHING DOWN **SHOULD BE THE SAME**. PAY ATTENTION TO THE FOLLOWING: THE GEOMETRIC BODY POSITION THE ATHLETE ADOPTS IN THE FLIGHT PHASE DOES NOT MATTER. IT IS VERY COMMON FOR THEM TO MOVE THEIR KNEES TOWARDS THEIR CHEST, BELIEVING THAT DOING SO, THEY WILL BE ABLE TO JUMP HIGHER. SINCE THE JUMP IS DEFINED WHEN TAKING OFF, DOING SO IMPLIES A WASTE OF ENERGY WHICH DOES NOT IMPROVE THEIR PERFORMANCE BUT MAKES THE BRAKING PROCESS IN THE TOUCH DOWN MORE DIFFICULT.

ANOTHER IMPORTANT THING IS THAT THE PROGRAM DOES NOT HAVE INFORMATION ABOUT STANDARD AREAS OF THE TEST RESULT SINCE IT WOULD BE AN ALMOST IMPOSSIBLE TASK. TO KNOW WHICH PARAMETERS ARE "GOOD", "VERY GOOD" OR "BAD" FOR A SPECIFIC ATHLETE, IT WILL BE ENOUGH TO KNOW HIS/HER PREVIOUS TEST SESSIONS AND A LITTLE EXPERIENCE IN SIMILAR SPORTSPEOPLE. TAKE INTO ACCOUNT THAT FACTORS SUCH AS AGE, SEX, SPORT, MAJOR FIELD WITHIN THAT SPORT, WEIGHT, HEIGHT AND LENGTH OF HIS BODY SEGMENTS, MOTOR HISTORY, TRAINING PERIOD S/HE IS IN AND THE PSYCHO-PHYSICAL STATE ARE IMPORTANT FACTORS, THAT IS WHY IT IS DIFFICULT TO CREATE THOSE TABLES. TAKE THE TABLES IN THE BIBLIOGRAPHY JUST AS AN EXAMPLE, USE THE "GROUP AVERAGE" TOOL TO CREATE YOUR OWN PARAMETERS ACCORDING TO THE SAMPLE YOU WANT. THE MOST USEFUL THING IS TO COMPARE AN ATHLETE WITH HIM/HERSELF, IN AN EVOLUTION GRAPH. THIS IS THE BEST WAY TO SEE THE EVOLUTIONS.

THE PROGRAM ALLOWS SIX TYPES OF TESTS:

4.2.1. SINGLE JUMPS

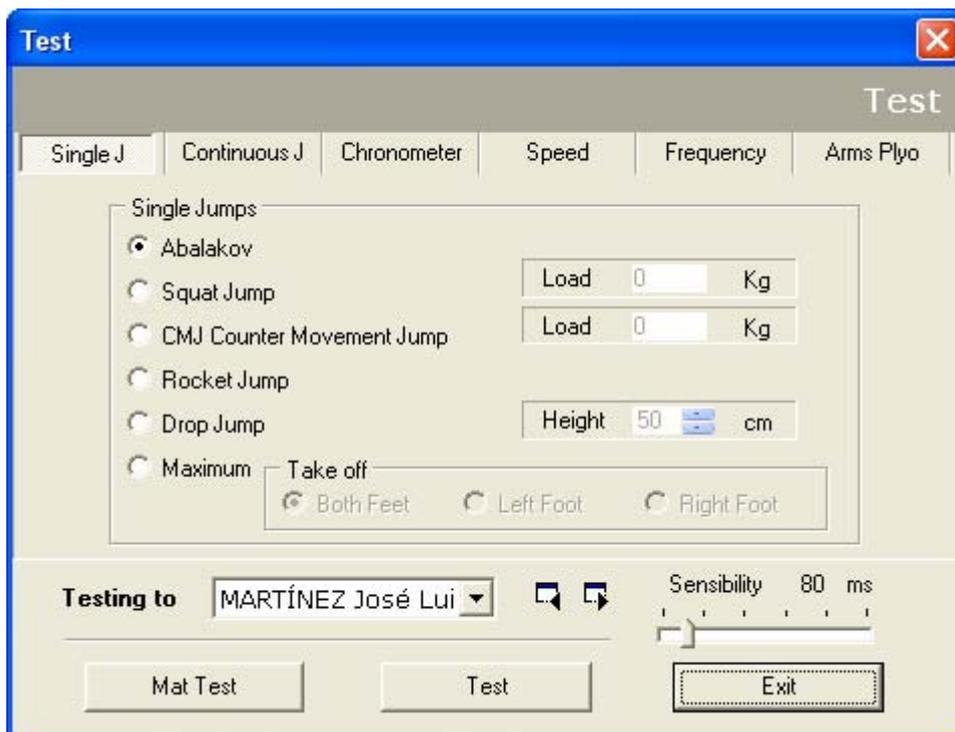
WE CAN DIVIDE THESE SINGLE JUMPS IN TWO BIG GROUPS:

COMPETENCE JUMPS: THEY ARE THOSE THAT ARE PERFORMED ACCORDING TO REGULATION OR A PREDETERMINED CHOREOGRAPHY. FOR INSTANCE, A DUNK IN BASKETBALL, A SPIKE OR BLOCK IN VOLLEYBALL, OR A TRIPLE JUMP IN ATHLETICS. THESE CAN ONLY BE ASSESSED IN THE CHRONOMETER OPTION OF THE SYSTEM, AND IN SOME CASES, MORE THAN ONE MAT MAY BE NECESSARY.

STANDARD JUMPS: THEY ARE JUMPS THAT ALLOW ASSESSING A SPECIFIC JUMPING COMPONENT. THE STRATEGY CONSISTS IN RESTRICTING A MOTOR ACTION (FOR EXAMPLE, THE ARMS ACTION) IN ORDER TO BE ABLE TO MEASURE IT BY SIMPLE DIFFERENCE BETWEEN BOTH KINDS OF JUMPS. THESE ARE THE JUMPS THAT ARE STORED IN THE ATHLETE'S SINGLE JUMPS PAGE. THE **AXON JUMP** SYSTEM ALLOWS ASSESSING **ALL** THE TYPES OF STANDARD JUMPS THAT HAVE BEEN FOUND IN THE BIBLIOGRAPHY SO FAR.

THESE JUMPS CONSIST IN PERFORMING AN ONLY JUMP AT THE ATHLETE'S MAXIMUM POSSIBILITIES. THE TEST STANDARD JUMPS DIFFER FROM ONE ANOTHER IN VERY SIMPLE MECHANICAL ISSUES, SO, **PERFORMING A SIMPLE SUBTRACTION BETWEEN THE RESULTS OBTAINED, WE CAN QUANTIFY THE MECHANICAL CAPACITY THE MADE ONE JUMP DIFFERENT FROM THE OTHER**. THEREFORE, WITH A JUMPS SET OF THESE JUMPS IT IS POSSIBLE TO OBTAIN A PROFILE OF THE ATHLETE'S JUMP CAPACITY, QUANTIFYING EACH ONE OF ITS COMPONENTS AND OBJECTIVELY DETECTING WHICH HIS/HER MECHANICAL MISTAKES ARE.





IN ORDER TO TEST A SINGLE JUMP, IT CAN JUST BE SELECTED FROM THE LIST IN THE "ASSESS"/SINGLE JUMPS WINDOW. IN THIS DIALOG, ALL THE POSSIBLE FORMS OF A UNIQUE JUMP ARE PRESENTED. THE SJ AND THE CMJ CAN BE PERFORMED WITH AN OVERLOAD, SO THIS VALUE NEEDS TO BE ENTERED IN KILOGRAMS. LIKEWISE, IN THE DJS THE STARTING HEIGHT OF THE FALL IS ALSO

REGISTERED, AND IT WILL BE SELECTED USING ARROWS, INCREASING OR DECREASING THIS VALUE IN CENTIMETERS.

IT IS POSSIBLE TO CHANGE THE ACTIVE ATHLETE FROM THIS WINDOW, SELECTING HIM/HER FROM THE LIST IN ALPHABETICAL ORDER OR USING THE BUTTONS "PREVIOUS" AND "NEXT".

IN THE LOWER RIGHT CORNER OF THIS WINDOW, THE SENSIBILITY CONTROL OF THE MAT CAN BE FOUND.

THIS CONTROL IS IMPORTANT IN JUMPS WITH COUNTERMOVEMENT, THAT IS, IN THOSE JUMPS IN WHICH THERE IS A FAST DESCENT OF THE GRAVITY CENTER SO AS TO GO UP THEN.



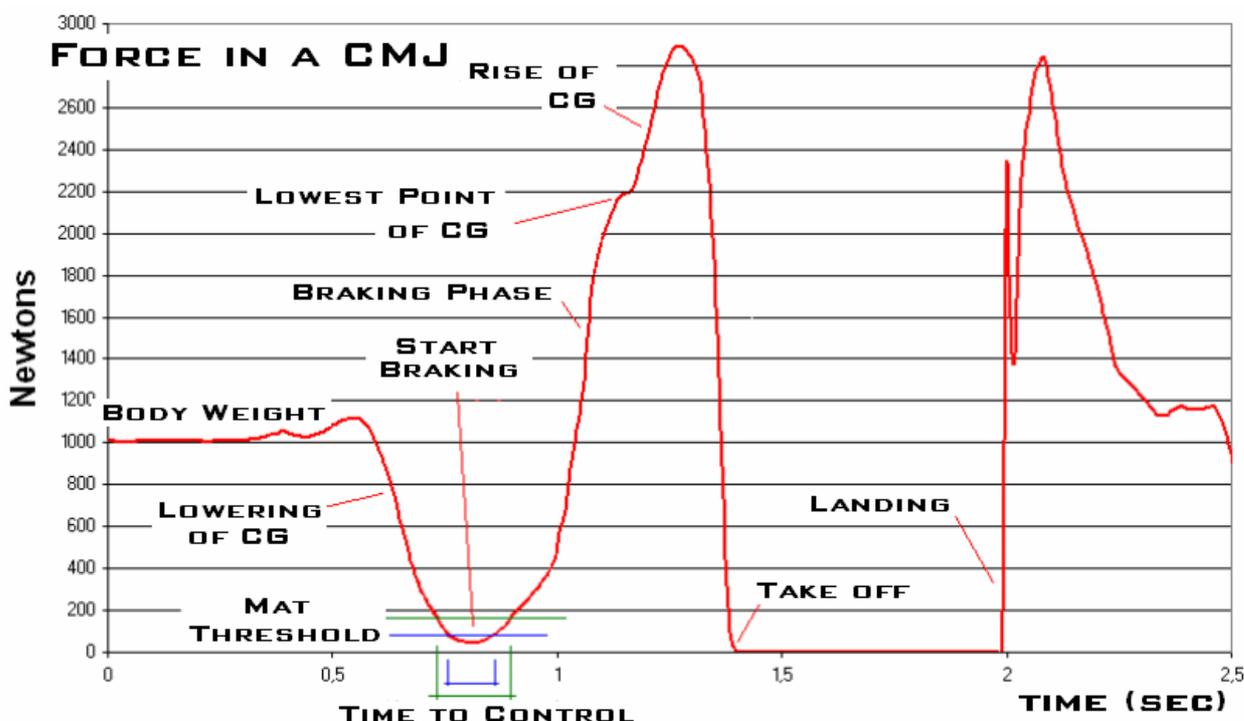
THESE JUMPS WITH COUNTERMOVEMENT (ABALAKOV, COUNTER MOVEMENT JUMP AND IN A SMALLER WAY THE MAXIMUM JUMP), USE THE INCREASE OF THE MECHANICAL OUTPUT OF THE MUSCLE PROFITING FROM THE CHARACTERISTICS OF THE STRETCHING-SHORTENING CYCLE OF THE SKELETAL MUSCULAR FIBER.

SOMETIMES, WHEN THE MAT SEEMS TO BE VERY SENSITIVE (WHEN ASSESSING BOYS OR GIRLS OR PEOPLE WITH VERY FAST DESCENTS), THIS CONTROL WILL ALLOW THE JUMP TEST TO BE CARRIED OUT NORMALLY.

WHEN THE WINDOW OF SINGLE JUMPS TESTS INDICATES "END OF TEST" WITH VERY SMALL RESULTS OF FLIGHT TIMES AND HEIGHTS, WE SHOULD INCREASE THE SENSITIVITY VALUES OF THE MAT TO TIMES WHICH ARE HIGHER THAN THOSE OF THE FLIGHT TIMES INDICATED IN THIS WINDOW.

THIS CAN BE EXPLAINED THROUGH THE FORCE VS. TIME IN A CMJ (TAKEN WITH A FORCE PLATFORM IN A LABORATORY).





DURING THE CG (COUNTERMOVEMENT) LOWERING PHASE, THE FORCES EXERTED AGAINST THE GROUND DECREASE SHARPLY. IN SOME CASES, THESE FORCES CAN BE SMALLER THAN THE PRESSURE CORRESPONDING TO THE TOUCH DOWN THRESHOLD OF THE INSTRUMENT. IN THESE CASES, ALTHOUGH THE ATHLETE IS TOUCHING THE MAT, THE FORCES CAN BE SO LOW THAT THE INSTRUMENT REPORTS TAKE-OFF HAS TAKEN PLACE. WHEN THE BRAKING PHASE OF THE BODY THAT IS DESCENDING BEGINS, THE FORCE EXERTED ON THE GROUND STARTS TO GROW UNTIL IT OVERCOMES THE MAT TRIGGER THRESHOLD LEVEL. AT THAT MOMENT, THE FALL SIGNAL IS SENT TO THE PC, THE TIME IS REPORTED AND THE JUMP HEIGHT AND SPEED ARE CALCULATED AS FROM THIS PRESUPPOSED "FLIGHT TIME". THIS INFORMATION CAN BE USED IN ORDER TO REGULATE THE INSTRUMENT SENSIBILITY.

EXAMPLE: IF A JUMP (MISTAKENLY) GIVES 93 MILLISECONDS AS FLIGHT TIME, WE HAVE TO REGULATE THE SENSIBILITY TO 110 MSEC SO THAT IT WILL NOT REPORT ANY "JUMP" LOWER THAN THIS TIME.

SINGLE JUMPS ARE STORED IN ITS CORRESPONDING ATHLETE'S **PERFORMED TESTS** NOTEPAD SHEET, IN A CHRONOLOGICAL ORDER AND AS FOLLOWS:

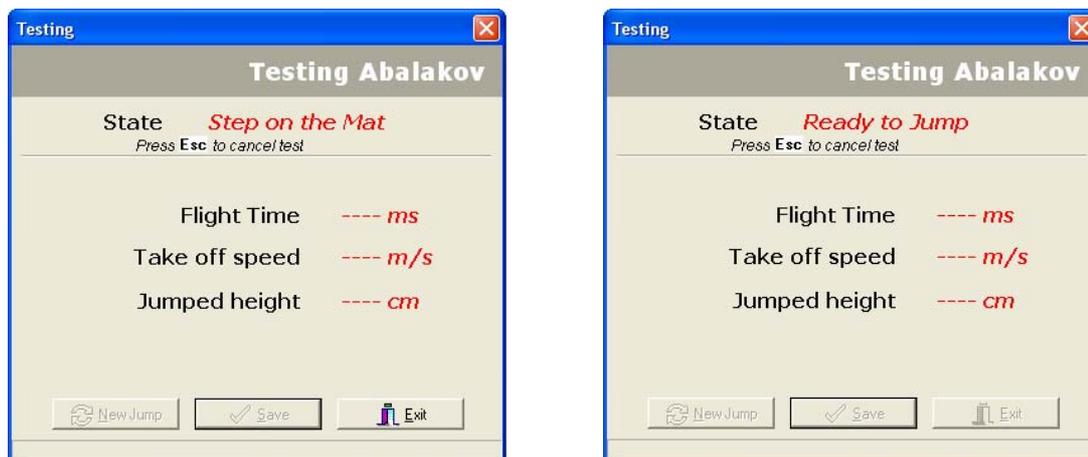
Performed Tests		Performed Trainings						
Date	Hour	Type	Contact	Flight	Height	Speed	Q	Drop H
19/04/02	18:43:55	Abalakov		703	60,6	3,45		
01/09/02	15:34:01	Abalakov		708	62,4	3,61		
18/01/03	17:14:31	Abalakov		732	64,8	3,68		
11/06/03	18:44:01	Abalakov		767	67,2	3,79		
17/03/04	17:34:16	Abalakov		789	69,1	3,82		
11/08/04	18:59:49	CMJ		666	54,4	3,27		

THE CHARACTERISTIC VARIABLES THAT ARE MEASURED AND CALCULATED IN THESE JUMPS, APART FROM THE DATE AND TIME OF THE TEST, ARE: THE MAXIMUM HEIGHT REACHED BY THE ATHLETE'S CG (CENTER OF GRAVITY), THE TAKE-OFF SPEED OF HIS/HER CG, THE FLIGHT TIME (FLIGHT), AND IN THE MJ'S AND DJ'S, THE TOUCH DOWN



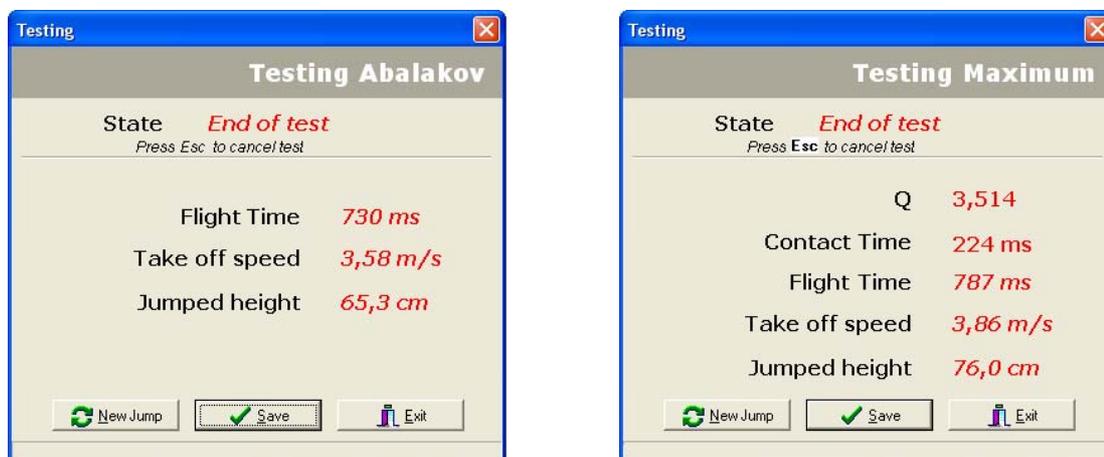
TIME (GROUND) AND THE QUALITY QUOTIENT (QUALITY) $Q = T_v/T_c$. THIS QUOTIENT SETS HOW MUCH TIME THE ATHLETE IS IN THE AIR, BY EACH SECOND S/HE WAS ON THE GROUND. IN THIS WAY, FOR INSTANCE, $Q = 3$ MEANS THE ATHLETE IN THE AIR THRICE AS MUCH AS ON THE FLOOR DURING THE TAKE-OFF PROCESS. IN A WAY, IT DETERMINES THE "QUALITY" OF THE JUMP.

ALL KINDS OF JUMPS ARE TESTED IN THE SAME WAY AND USING THE SAME WINDOW SYSTEM. ONCE THE TYPE OF JUMP HAS BEEN SELECTED, THE "TEST" BUTTON WILL TAKE US TO THE FOLLOWING TEST WINDOW:



THE WINDOW RED HEADING GUIDES US ON WHAT TO DO NEXT. IF IT IS A SINGLE JUMP THAT HAS TO BE MADE FROM THE MAT (ALL EXCEPT MJ AND DJ), IT WILL TELL US THE ATHLETE HAS TO "STEP ON THE MAT" IN ORDER TO START MEASURING. ONCE THE ATHLETE IS ON THE MAT, THE SYSTEM WILL BE AWARE OF THE PERSON'S TAKE-OFF AND IT WILL SHOW THE "READY TO JUMP" MESSAGE. IF THE TAKE-OFF IS VERY SMALL, FOR INSTANCE IN A DOUBLE JUMP, THE SYSTEM WILL AUTOMATICALLY CORRECT IT (AS LONG AS ITS FLIGHT TIME IS LOWER THAN THE THRESHOLD SET IN "SENSIBILITY") AND "READY TO JUMP" WILL COME NEXT. IF, ON THE CONTRARY, THE ATHLETE TAKES OFF FROM THE MAT AND FALLS OUTSIDE OR WALKS AWAY AND COMES BACK, THE SYSTEM WILL AUTOMATICALLY DETECT IT IS NOT A VALID JUMP AND "READY TO JUMP" WILL REMAIN THERE. THESE AUTOMATIC CORRECTIONS ARE CARRIED OUT WITHOUT THE USER'S TAKING PART, WHICH MAKES THE TEST EASIER. SUCH CORRECTIONS ARE REPORTED IN THE STATUS LINE, IN THE LINE SITUATED BELOW THE THREE BUTTONS.

ONCE THE JUMP HAS BEEN MADE CORRECTLY, THE WINDOW WILL INFORM US THE TEST HAS FINISHED: "END OF TEST" AND IT WILL GIVE US THE INFORMATION OF THE ATTEMPT IN ITS CENTRAL REGION, SO THE TESTER CAN JUDGE IT.



THIS TEST WINDOW CAN SHOW SOME OTHER INFORMATION DEPENDING ON THE TYPE OF JUMP BEING ASSESSED. FOR INSTANCE, IN MJS AND DJS, APART FROM THE VARIABLES MENTIONED ABOVE, THE TOUCH DOWN TIME AND THE QUALITY QUOTIENT OF THE JUMP ARE REPORTED, SO THAT THE PERSON ASSESSING CAN HAVE ALL THE VARIABLES AT HAND IN ORDER TO DISMISS OR SAVE THE ATTEMPT. THE SYSTEM WILL WAIT FOR THE USER'S SELECTION OUT OF THE THREE BUTTONS AT THE BOTTOM:

NEW JUMP: IT LEAVES THE SYSTEM "READY TO JUMP" AGAIN, **WITHOUT SAVING THE ATTEMPT INFORMATION**. IT IS USED WHEN THE ATTEMPT DOES NOT WANT TO BE SAVED DUE TO BAD PERFORMANCE OR ANY OTHER REASON THE PERSON ASSESSING HAS DETECTED.

SAVE: IT SAVES THE ATTEMPT INFORMATION IN THE CORRESPONDING TEST SHEET, AND IT LEAVES THE SYSTEM "READY TO JUMP" AGAIN.

EXIT: IT TAKES THE SYSTEM BACK TO THE PREVIOUS WINDOW OF TEST SELECTION. THIS BUTTON WILL BE DISABLED DURING THE TEST SESSION ALTHOUGH IT IS POSSIBLE TO CANCEL IT USING THE "ESCAPE" KEY AS SAID BELOW THE STATE.



IT IS POSSIBLE TO CANCEL AN TEST SESSION BEING CARRIED OUT PRESSING THE "ESCAPE" KEY. THIS WILL MAKE THE SYSTEM STOP SENSING THE MAT STATE AND PAY ATTENTION TO THE ORDER THE USER ENTERS USING THE KEYBOARD. EACH TIME THE "TEST" BUTTON IS CLICKED ON, YOU WILL BE SELECTING THE LAST JUMP ASSESSED, SO YOU WILL NOT HAVE TO SELECT THE TYPE OF JUMP EACH TIME THE TEST IS PERFORMED.

THESE JUMPS AND THEIR USES ARE THE FOLLOWING:

4.2.1.1. ABALAKOV (ABK)

IT IS A VERTICAL JUMP IN THE SPOT WITH FREE COUNTERMOVEMENT AND ARM INFLUENCE. IT IS USED TO QUANTIFY THE "COORDINATIVE" INFLUENCE BY ITS DIFFERENCE WITH THE MJ.



4.2.1.2. COUNTER MOVEMENT JUMP (CMJ) AND CMJ WITH LOAD

THE SAME AS ABK, BUT VOIDING THE ARMS ACTION PLACING THE HANDS ON THE WAIST. IT IS USED TO QUANTIFY THEIR INFLUENCE BY ITS DIFFERENCE WITH THE ABK.



IT CAN BE PERFORMED WITH LOAD, HOLDING THE BAR ON THE SHOULDERS. IN THIS WAY, THE ARMS ACTION IS ALSO VOIDED. TAKE INTO ACCOUNT THAT IN ORDER TO PERFORM THESE JUMPS WITH OVERLOAD, THE ATHLETE HAS TO BE STRENGTHENED ENOUGH WITH A GRADED TRAINING SO AS TO BE ABLE TO BEAR IT. THE VALUE OF THE LOAD SHOULD BE ENTERED IN ITS CORRESPONDING FIELD, TO THE LEFT OF THE JUMPS SELECTION, IN KILOGRAMS.

4.2.1.3. SQUAT JUMP (SJ)

JUMP WITHOUT COUNTERMOVEMENT OR ARMS (HANDS ON THE WAIST). IN THIS JUMP, THE STRETCHING-SHORTENING CYCLE IS VOIDED SO AS TO BE ABLE TO QUANTIFY IT: IN SOME BIBLIOGRAPHY, THIS DIFFERENCE IS CALLED **REACTIVE CAPACITY**. THE POSITION AT THE BEGINNING IS WITH THE KNEES SEMIFLEXED. SPECIAL ATTENTION SHOULD BE GIVEN TO MAINTAINING THE INITIAL POSITION FOR AT LEAST 2 SECONDS AND TO THE FACT THAT THE ATHLETE SHALL NOT PERFORM ANY COUNTERMOVEMENT, THAT IS TO SAY, ONLY THE EXTENSION MOVEMENT IS ALLOWED.



IF THE ATHLETE PERFORMS ANY COUNTERMOVEMENT (VOID JUMP), ONE OF THE WAYS TO MAKE HIM/HER UNDERSTAND THE CORRECT SPORT MOVEMENT IS TO MAKE HIM/HER JUMP WITH THE PERSON ASSESSING PUSHING HIM/HER DOWNWARDS WITH BOTH HANDS ON THE ATHLETE'S SHOULDERS. THIS WILL MAKE IT DIFFICULT FOR HIM/HER TO GENERATE A DESCENDING MOVEMENT. IN THE BIBLIOGRAPHY, THERE EXIST A LOT OF STATISTICAL DATA REGARDING THIS TYPE OF JUMP, AND IT IS USED FOR QUANTIFYING THE REACTIVE CAPACITY BY ITS DIFFERENCE WITH THE CMJ.

IT CAN ALSO BE PERFORMED BEARING A LOAD ON THE SHOULDERS. THE VALUE OF THE LOAD SHOULD BE ENTERED IN THE CORRESPONDING FIELD, TO THE LEFT OF THE SELECTION OF JUMPS, IN KILOGRAMS.

4.2.1.4. ROCKET JUMP (RJ)

IT IS A JUMP WITHOUT COUNTERMOVEMENT OR ARMS ACTION, AND STARTING FROM A SQUATTING POSITION OR RELAXED DEEP FLEXION. IT CHARACTERISTICALLY PRESENTS A DOUBLE FORCE PEAK CURVE IN THE THRUST PHASE, AND A HIGH CORRELATION WITH THE MAXIMUM VALUES OBTAINED IN FULL SQUAT.

IT IS USED FOR QUANTIFYING THE ACTION OF THE LOWER LIMBS EXTENDING MUSCLES AT THEIR DEEPEST ANGLES, SUBTRACTING THE VALUE OBTAINED WITH THAT OF THE SJ.



4.2.1.5. MAXIMUM JUMP (MAX OR MJ)



IT IS A FREE VERTICAL JUMP WHOSE ONLY RESTRICTION IS THAT THE TAKE-OFF AND LANDING HAVE TO BE PERFORMED ON THE TEST SURFACES. STRICTLY SPEAKING, THIS JUMP IS NOT A STRICTLY VERTICAL JUMP, THEREFORE, AND FOR SAFETY REASONS,



SPECIAL ATTENTION SHOULD BE PAID TO PLACING THE CONTACT MAT ON AN ANTI-SLIDING SURFACE IN ORDER TO AVOID SLIPPING WHEN TAKING OFF OR LANDING. THIS JUMP IS USED TO QUANTIFY THE COORDINATIVE COMPONENT BY SIMPLE DIFFERENCE WITH THE ABK, APART FROM SHOWING THE HIGHEST JUMPING CAPACITY OF THE ATHLETE'S JUMP.

APART FROM MEASURING THE CHARACTERISTIC VARIABLES OF THE JUMP, THE Q QUOTIENT IS ALSO MEASURED IN THIS JUMP.

A MORE COMFORTABLE WAY OF ASSESSING THIS TYPE OF JUMP IS USING TWO MATS: ONE FOR TAKE-OFF AND THE OTHER FOR LANDING.

4.2.1.6. DROP JUMP (DJ)



IT IS A JUMP PERFORMED FROM A DETERMINED STARTING DROP HEIGHT. DURING TOUCH-DOWN, THE ECCENTRIC BRAKING AND THE CONCENTRIC TAKE-OFF ARE PRODUCED, TO FALL BACK ON THE TAKE-OFF SPOT.

THE FALL HEIGHT IS VARIED LITTLE BY LITTLE (FOR EXAMPLE FROM 5-10 CMS), SO AS TO FORM A SEQUENCE OF DJS WITH PROGRESSIVE HEIGHTS, AIMING AT OBJECTIVELY CHOOSE THE HEIGHT FOR THE PLYOMETRIC TRAINING. THE Q QUOTIENT IS VITALLY IMPORTANT FOR THE SELECTION OF THE BEST HEIGHT. THIS JUMP IS USED FOR QUANTIFYING PLYOMETRIC TASKS.

WE CAN THEN MAKE A GRAPH OF Q ACCORDING TO THE FALL HEIGHT IN ORDER TO DETERMINE THE HEIGHT OF THE MAXIMUM PERFORMANCE. IF WE THEN CHOOSE SMALLER HEIGHTS THAN THE BEST, WE GIVE PRIORITY TO THE SPEED AND IF WE CHOOSE GREATER HEIGHTS THAN THE BEST, WE GIVE PRIORITY TO FORCE. EVERYTHING DEPENDS ON THE OBJECTIVE PLANNED DURING THE TRAINING PERIOD THE ATHLETE IS IN.

4.2.2. CONTINUOUS JUMPS (CJS)

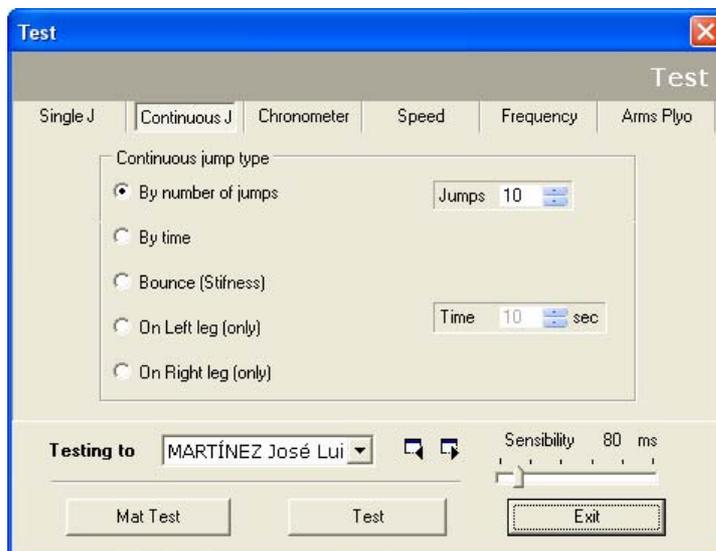
THEY ARE MAXIMUM VERTICAL JUMPS PERFORMED REPEATEDLY AND FREELY IN A SPOT. IN SOME BIBLIOGRAPHY, THEY ARE INDIFFERENTLY DESCRIBED AS "MULTIPLE JUMPS". THE INSTRUCTIONS TO GIVE THE ATHLETE ARE THAT EACH OF THEM HAS TO PERFORM TO THEIR MAXIMUM POSSIBILITIES AND THAT THE TOUCH-DOWN TIME IS COUNTERPRODUCTIVE.

THERE ARE TWO MAIN TYPES, ACCORDING TO THE CONDITION OF THE END OF TEST: WITH A FIXED NUMBER OF JUMPS, OPTION "BY NUMBER OF JUMPS" OR IN A PRE-SET TIME, OPTION "BY TIME". THIS LAST CHOICE SETS THE LIMIT FOR FINISHING THE CONTINUOUS JUMPS WILL BE A PERIOD OF TIME SELECTED BY THE USER. OF COURSE, THIS PERIOD



OF TIME IS DETERMINED BY THE DURATION OF AN ACTION OF THE SPORT OR SPORT MOVEMENT THAT WANTS TO BE ASSESSED. EITHER OF THESE OPTIONS CAN BE PERFORMED WITH OR WITHOUT ARMS INFLUENCE, IN CASE OF THE LATTER, THE HANDS WILL BE ON THE WAIST.

OTHER OPTIONS BY TIME ARE “**BOUNCE**”, WHICH IS THE JUMPS MADE WITHOUT FLEXING THE KNEES (SEE PHOTOGRAPH BELOW), AND **ON ONE LEG** (“**ONE LEG JUMPING**”, AS IT IS COMMONLY CALLED), TO MEASURE ANY ASYMMETRY BETWEEN BOTH LIMBS.



THEY ARE TYPICALLY USED TO MEASURE **FATIGUE**. THEY CAN ALSO BE USED FOR QUANTIFYING THE INFLUENCE OF THE KNEE JOINT BY A SIMPLE DIFFERENCE BETWEEN TWO CJS PERFORMED FREELY FLEXING AND WITHOUT FLEXING THE KNEES (BOUNCE). THIS AIMS AT KNOWING WHICH KIND OF CONTRIBUTION EACH JOINT HAS ON THE SPORTIVE MOVEMENT.

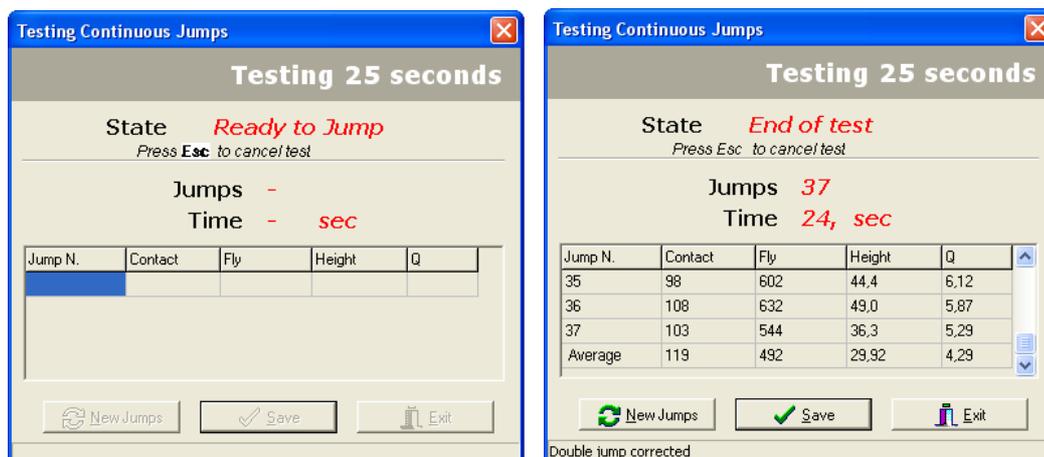
THEY WAY OF TESTING IS SIMILAR TO THAT IN SINGLE JUMPS, THE ONLY DIFFERENCE IS THAT DURING THE TEST SESSION, WE CAN SEE THE FOLLOWING VARIABLES IN REAL TIME: **TIME ELAPSED** AND **NUMBER OF CURRENT JUMP**, SO AS TO

KNOW AT WHICH POINT THE TEST IS SITUATED AND HOW MUCH TIME IS LEFT FOR ITS ENDING. WHEN BEGINNING TO JUMP, THE MAT SHOULD BE FREED. TO PERFORM ONE OF THESE TEST SESSIONS CORRECTLY, A LITTLE PREVIOUS PRACTICE IS NECESSARY. SOMETHING TO BE TAKEN INTO ACCOUNT IS **TO PERFORM THE FIRST JUMPS OUT OF THE MAT** TO ENTER A MAXIMUM OUTPUT STATE. ONCE THIS STATE HAS BEEN REACHED, THE ATHLETE STEPS ON THE MAT AND THE SO CALLED TEST BEGINS.

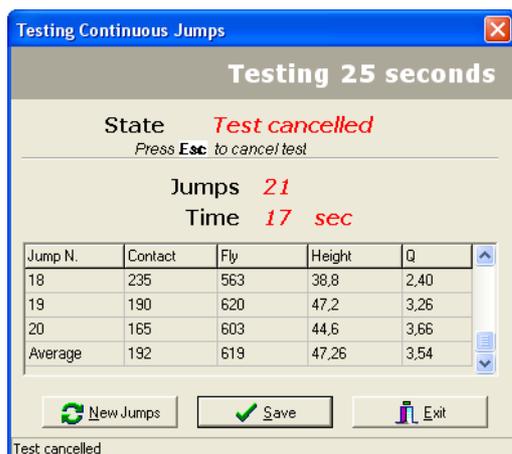
IF DURING ANY OF THE JUMPS, ONE OF THE FEET STEPS OUT OF THE MAT, THE TEST CAN CONTINUE WITHOUT MAKING BIGGER MISTAKES. IF ONE OF THE TAKE-OFF'S TAKES PLACE OUT OF THE MAT, THE TEST WILL AUTOMATICALLY BE CANCELLED IF THIS TIME WAS GREATER THAN 1 SECOND, OR IT SHOULD BE READ BEING AWARE OF WHAT HAS HAPPENED.



WHEN FINISHING THE SET CONDITION, A WINDOW WILL SHOW THE INFORMATION OF ALL



THE VARIABLES IN ORDER TO BE ABLE TO JUDGE THE ATTEMPT, IN A TABLE OR SHEET. IN THE LAST LINE OF THIS SHEET, THE **AVERAGE** OF ALL THE JUMPS IS SHOWN. IF THE CONDITION SET IS A DETERMINED NUMBER OF SECONDS (BY TIME), IT IS VERY PROBABLE THAT WHEN REACHING THIS VALUE, THE ATHLETE WILL BE PERFORMING A JUMP. SINCE IT IS HIGHLY IMPROBABLE THAT THE TIME IS OVER WHEN THE TAKE-OFF FINISHES, THE TIME LIMIT RECORDED WILL BE SLIGHTLY SMALLER THAN THE ONE SET BY THE USER TO FINISH ON THE LAST **COMPLETE** JUMP PERFORMED WITHIN THE SET TIME.



THE TEST **CAN BE CANCELLED IN TWO WAYS**: PRESSING "ESCAPE" DURING THE PERFORMANCE, OR KEEPING OFF THE MAT FOR MORE THAN ONE SECOND, AS WHEN THE ATHLETE FALLS OUT OF THE MAT IN ANY OF HIS/HER JUMPS. IN BOTH CASES, THE PROGRAM WILL SHOW A WINDOW OF CANCELLED TEST, BUT WITH ALL THE DATA AND AVERAGE OF THE VALID JUMPS PERFORMED UP TO THAT MOMENT, SO THAT THEY CAN BE SAVED AND THE ATHLETE EFFORT WILL NOT BE WASTED. THE SENSIBILITY CONTROL WORKS IN THE SAME WAY AS IN THE SINGLE JUMPS, BUT FOR EACH JUMP INDIVIDUALLY.

THE RESULTS OF THIS KIND OF TEST ARE CHRONOLOGICALLY STORED IN THE CORRESPONDING SHEET, SHOWING A SUMMARY IN THE FIRST LINE (VALUES BETWEEN SQUARE BRACKETS) AND THE DETAIL OF THE VARIABLES JUMP BY JUMP. THE VALUES BETWEEN BRACKETS OF THE FIRST LINE ARE THE AVERAGES OF ALL THE JUMPS PERFORMED EXCEPT FOR THE VARIABLES OF JUMPS AND TIME, WHICH WILL GIVE US THE TOTALS.

THE **PERFORMANCE AVERAGE** IS CALCULATED AS FOLLOWS: THE AVERAGE OF THE FIRST THREE Q'S ESTABLISHES 100 %. AS REGARDS THIS VALUE, THE PERFORMANCE PERCENTAGE IS CALCULATED JUMP AFTER JUMP. SINCE THERE EXIST SOME VARIATIONS AMONG THE JUMPS, THE PERFORMANCE OF EACH OF THEM IS ESTABLISHED WITH A MOVING AVERAGE OF SUCH JUMP Q, ITS PREVIOUS JUMP AND ITS NEXT. THE IDEA OF THIS MATHEMATICAL FILTERING PROCESS IS TO OBTAIN A CURVE WITH A LESS SENSITIVE TENDENCY TO THE VARIATIONS INHERENT TO THIS TEST. THE RATE WILL SIMPLY AND CORRECTLY INDICATE THE PERCENTAGE THE PERFORMANCE DECREASES (OR NOT) IN A MAXIMUM JUMP EXERCISE IN A SERIES, WHEN THIS IS PERFORMED DURING A DETERMINED PERIOD OF TIME. THE CURVE OF THIS VARIABLE WILL TELL US HOW MUCH



TIME THE ATHLETE CAN BEAR A MAXIMUM INTENSITY STATE WITHIN REASONABLE LIMITS OF MECHANICAL PERFORMANCE (ANAEROBIC-LACTATIC ENDURANCE).

Performed Tests		Performed Trainings									
Date	Hour	Type	Jumps	Time	Contact	Flight	Height	Speed	Q	%Perf.	Stiffness
08/09/04	17:23:52	By Time	16	19,84	[175]	[398]	[19,56]	[1,95]	[2,40]	[100]	[40,16]
			1		169	397	19,4	1,95	2,349	100	35,66
			2		219	336	13,9	1,65	1,534	100	23,56
			3		128	430	22,7	2,11	3,359	111	58,05
			4		125	397	19,4	1,95	3,176	127	61,46
			5		137	369	16,7	1,81	2,693	106	52,76
			6		195	358	15,8	1,76	1,836	83	28,36
			7		252	368	16,7	1,81	1,46	70	18,04
			8		226	396	19,2	1,94	1,752	79	21,36
			9		163	405	20,1	1,99	2,485	99	37,88

STIFFNESS IS CALCULATED WITH THE FORMULAE INTRODUCED BY G.DALLEAU, A. BELLI, F.VIALE, J.-R.LACOUR Y M.BOURDIN. (SEE REFERENCE AT 5.4 ITEM).

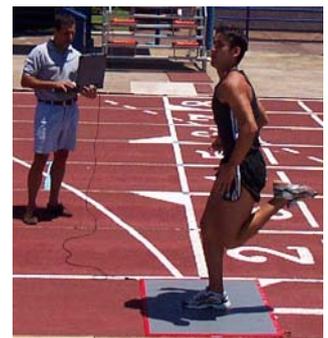
THE **FATIGUE** CAN BE CALCULATED BY SIMPLE DIFFERENCE BETWEEN 100 % (WITHOUT ANY FATIGUE) AND THE PERFORMANCE PERCENTAGE OF EACH JUMP. IN OTHER WORDS, THE PERFORMANCE PERCENTAGE ALSO EXPRESSES THE FATIGUE. WE CAN SPEAK OF GENERAL FATIGUE OF THE TEST MAKING A DIFFERENCE AMONG THE AVERAGES OF THE FIRST THREE AND THE LAST THREE JUMPS, USING THE LAST PERFORMANCE VALUE.

IT IS USUAL TO FIND PERFORMANCE PERCENTAGES HIGHER THAN 100%. THIS IS DUE TO THE FACT THAT THE FIRST THREE REFERENCE JUMPS HAVE NOT BEEN PERFORMED TO THE MAXIMUM OF POSSIBILITIES OR THAT THE ONES PERFORMED OUT OF THE MAT HAVE NOT BEEN MADE IN THE SAME WAY. IT IS LOGICAL THAT THE PERFORMANCE WILL DECREASE THROUGHOUT TIME, OR THAT IT HAS A TENDENCY TO DROP. ANYWAY, IF THE TEST IS REPEATED AND CONTINUES HAVING THIS RESULT, IT MAY BE AN ATHLETE'S CHARACTERISTIC.

4.2.3. CHRONOMETER

WE CAN USE THE AXON JUMP SYSTEM AS A POWERFUL HIGH-PRECISION PROGRAMMING AUTOMATIC CHRONOMETER SYSTEM. IT CAN BE USED TO CREATE TAILOR-MADE KINEMATIC MEASUREMENT PROTOCOLS.

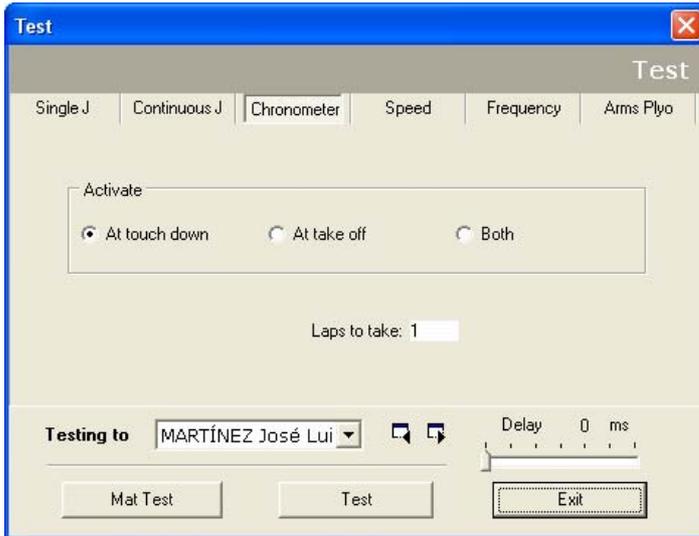
THE FIRST THING TO ENTER IS THE NUMBER OF LAPSES WE WISH TO TAKE. THE CHRONOMETER STARTS WORKING WITH THE FIRST VALID SIGNAL COMING FROM THE MAT. **THE START IS NOT TAKEN AS A LAPSE.**



THIS MEANS THAT IF WE ENTER 1 LAPSE, 2 EVENTS WILL BE NECESSARY TO END THE TEST (IN FACT, THE START AND THE LAPSE). THE NUMBER OF LAPSES TO TAKE HAS TO BE ENTERED IN THE CELL CORRESPONDING TO THIS.

TAKE INTO ACCOUNT THAT EACH TOUCH DOWN ON THE MAT WILL CREATE ONE OR TWO LAPSES ACCORDING TO THE TYPE OF ACTIVATION THE USERS WISHES FOR EACH PARTICULAR CASE.





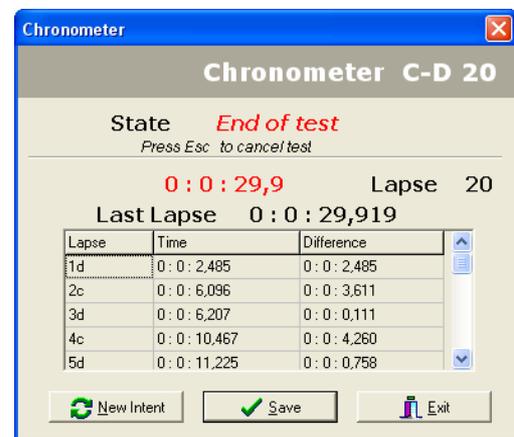
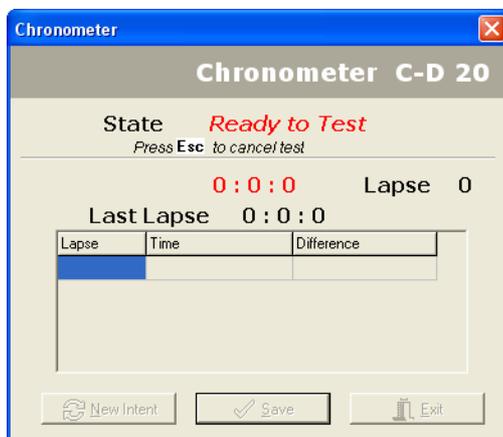
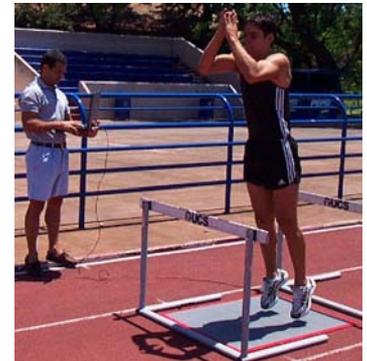
IT CAN BE ACTIVATED IN THREE DIFFERENT WAYS:

WHEN TOUCHING DOWN, THAT IS TO SAY, AT THE MOMENT OF LANDING.



IT CAN ALSO BE ACTIVATED **WHEN TAKING OFF**, THAT IS TO SAY, THE MOMENT THE ATHLETE (OR BICYCLE, SKATER, ETC.) LOSES CONTACT WITH THE MAT. IT CAN BE USED TO MEASURE STARTS FROM THE MAT.

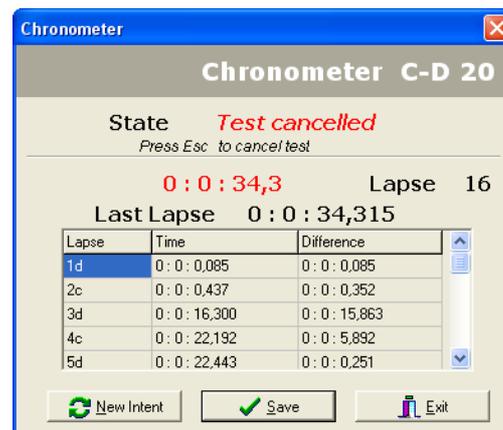
WHEN ACTIVATED IN **BOTH EVENTS**, TWO VALID LAPSES WILL BE OBTAINED FOR EVERY STEP: TOUCH DOWN AND TAKE-OFF. IT CAN BE USEFUL TO MEASURE CONTACT TIMES IN PLYOMETRIC TRAININGS, TO MEASURE CONTACT TIMES OF A STEP IN GAIT, JOGGING, RUNNING OR SPRINTING, OR TO INVESTIGATE ANY JUMP OR COMPETITION SPORT MOVEMENT.





THE **DELAY** TOOL IS A SENSIBILITY TOOL WHICH WORKS IN A SIMILAR WAY TO THE ONE SEEN IN THE JUMPS, THE DIFFERENCE BEING THAT THE DELAY WORKS AS A PERIOD OF TIME IN WHICH **NO** NEW READINGS WILL BE TAKEN AFTER A RECORDED VALID LAPSE. IT IS USED TO AVOID THE NORMAL “BOUNCING” OF THE MAT (MULTIPLE LAPSES TAKEN IN THE SAME TOUCH DOWN), OR TO AVOID TAKING MORE THAN ONE LAPSE IN ANY TEST IN WHICH THE ATHLETE HAS TO GO OVER THE MAT AND TAKES TWO STEPS, A SMALL JUMP ON IT, ETC.

THE TEST CAN BE CANCELLED AT ANY TIME PRESSING THE **ESCAPE** KEY. THE RESULTS OBTAINED SO FAR CAN BE SAVED.



THE RESULTS OF THIS TYPE OF TEST ARE CHRONOLOGICALLY STORED IN THE CORRESPONDING SHEET, SHOWING THE DATA IN THREE COLUMNS: THE **LAPSE** WILL BE STORED IN AN INCREASING-NUMBER FASHION, FOLLOWED BY LETTERS **TD** OR **TO**, ACCORDING TO WHETHER IT HAS BEEN A TOUCH DOWN OR A TAKE-OFF RESPECTIVELY. THE **TIME** REPRESENTS THE TOTAL TIME ACCUMULATED SINCE THE BEGINNING OF THE EVENT, WHILE THE **DIFFERENCE** REPRESENTS THE RESULT OF THE SUBTRACTION BETWEEN THE LAST TWO MEASUREMENTS. THIS LAST COLUMN IS USEFUL WHEN THERE IS A MEASUREMENT SUCH AS LOOPS OR LAPSES IN DISTANCES ALIKE.

Date	Hour	Type	Lapse	Time	Difference
08/09/04	17:19:58	Conometro C-D 23	1d	0 : 0 : 0,123	0 : 0 : 0,123
			2c	0 : 0 : 0,197	0 : 0 : 0,074
			3d	0 : 0 : 0,251	0 : 0 : 0,054
			4c	0 : 0 : 0,302	0 : 0 : 0,051
			5d	0 : 0 : 0,970	0 : 0 : 0,668
			6c	0 : 0 : 8,785	0 : 0 : 7,815
			7d	0 : 0 : 9,001	0 : 0 : 0,216

4.2.3.1. RANGE OF USES

THE MAT CAN BE PLACED AT THE START LINE OF AN ATHLETICS TRACK OR SKATING OR CYCLING TRACK, AND IT CAN BE USED TO MEASURE EXACTLY LAPSES OF A PARTICULAR NUMBER OF LOOPS. THIS CAN BE DONE AUTOMATICALLY, HUMAN-ERROR-FREE, AND WITH A RELIABLE RECORD OF EACH OF THEM.

WE CAN MEASURE HOW LONG A PLYOMETRIC JUMP TOUCH DOWN LASTS EXACTLY, OF COURSE, IF THE JUMPS HEIGHT IS ALWAYS THE SAME. A DECREASE IN THESE TIMES VALUES WILL INDICATE A POWER INCREASE.





WE CAN MEASURE HOW LONG THE TOUCH DOWN TIME DURING THE TAKE-OFF LASTS EXACTLY IN A HURDLE CLEARANCE, OR ALSO DURING THE LANDING, EVEN BOTH AT THE SAME TIME IF WE HAVE A SECOND MAT.



THE SAME CAN BE DONE IN A TEST OF A TRIPLE JUMP IN EACH STANCE PHASE.

THE ONLY THING YOU HAVE TO DO IS DETERMINE BEFOREHAND WHERE THE FEET WILL BE STANDING DURING THE SPORT MOVEMENT AND PLACE THE MAT(S) IN THE CORRECT POSITION.

WE CAN DIVIDE THE MAT IN 9 EQUAL RECTANGLES USING WHITE ADHESIVE TAPE AND DEPARTING FROM THE CENTER WITH JUST ONE FOOT ON THE MAT (ASSESS BOTH), WE CAN MEASURE THE TIME IT TAKES TO JUMP ACROSS FROM THE CENTER TOWARDS THE EIGHT ZONES OF THE SIDES, ALWAYS COMING BACK TO THE CENTER AFTER TOUCHING EACH OF THE ZONES (SIXTEEN JUMPS WITH EACH FOOT). IN THIS WAY, WE CAN ALSO KNOW WHICH THE WEAKEST DIRECTION THAT THE ATHLETE HAS IS IN ORDER TO PRODUCE SPEED CHANGES OR BRAKING WITH THAT FOOT.

THE MAT CAN BE PLACED AT THE START OF A TRAINING CIRCUIT OR EVEN AT ONE OF THE KEY STOPS. IT CAN BE MOVED FROM ONE PLACE TO ANOTHER CAREFULLY WHILE THE ATHLETE IS AT ONE OF TRAINING STATIONS SO AS TO TIME IT WITH A CHRONOMETER IN REPRESENTATIVE SPOTS.

THE RANGE OF POSSIBILITIES FOR USING IT IS ENDLESS, ESPECIALLY IN RESEARCH.

WE CAN ANSWER QUESTIONS SUCH AS:

HOW MUCH TIME DOES A SPORT WALKER'S STANCE PHASE LAST AT A SPECIFIC SPEED?

DOES A SPORT WALKER HAVE FLIGHT TIME?

AT WHAT SPEED DOES THIS FLIGHT TIME START?

HOW MANY MILLISECONDS DOES IT FLY?

WHEN DOES THE FLIGHT TIME BECOME VISIBLE AT EYE-LEVEL?

HOW MUCH DOES A TENNIS PLAYER'S BRAKING LAST ON THE LEFT OR ON THE RIGHT?

ARE THESE BRAKINGS ALIKE OR DO THEY HAVE A WEAK SIDE?

DOES A SPECIFIC TRAINING INFLUENCE THE TOUCH DOWN TIME OF A DROP JUMP OR THE BRAKING TIME?

WHICH FORM OF TRAINING IMPROVES THESE TIMES?

WHEN DO THE CIRCUIT TIMES DECREASE MORE, AFTER WEIGHT-LIFTING TRAINING OR AFTER A STRETCHING SESSION?

HOW LONG DOES A BASKETBALL BOUNCE TAKE? ETC.

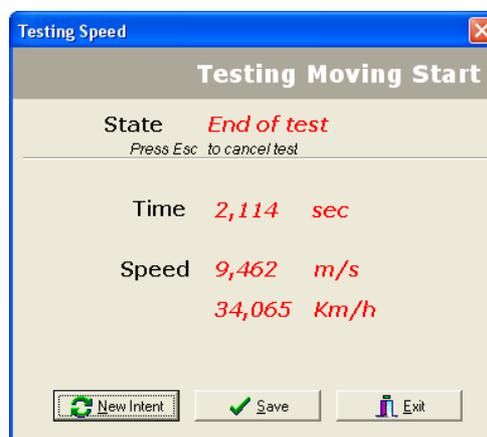
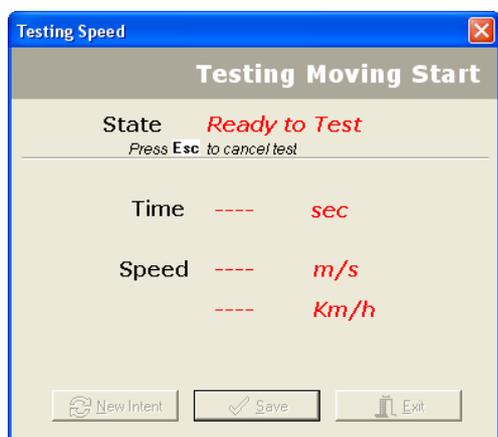
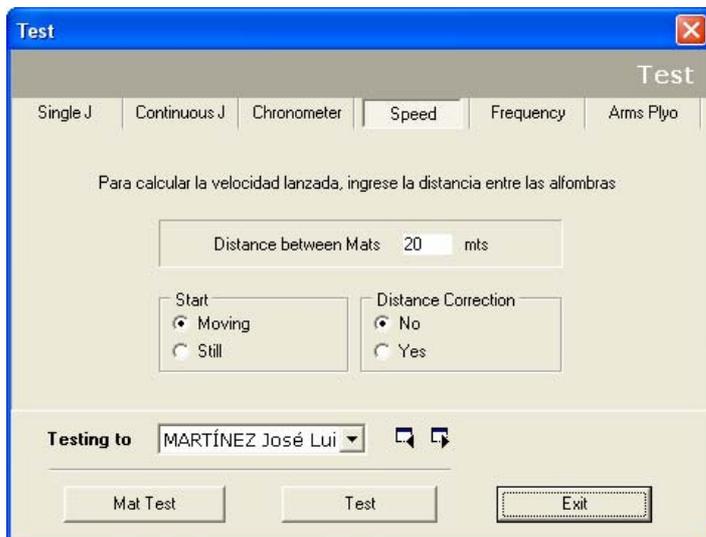


4.2.4. SPEED

IN ORDER TO ASSESS SPEED, THE SEPARATION **DISTANCE** BETWEEN THE MATS HAS TO

BE ENTERED FIRST (USUALLY FROM CENTER TO CENTER) IN CASE WE ARE USING TWO, OR THE DISTANCE TO TRAVEL IN A CLOSED CIRCUIT IN CASE WE ARE USING ONLY ONE. THE MEASURING SHOULD BE DONE OVER THE RACE LINE INSTEAD OF DOING IT OVER THE PERIMETER. THE OTHER IMPORTANT DATUM TO ENTER IS THE TYPE OF **DEPARTURE** THAT WILL BE DONE IN THE MEASURING: THIS WILL DETERMINE THE CHRONOMETER START CONDITION. IF THE DEPARTURE IS **STARTS IN A RUNNING CONDITION** THE MEASURING WILL BE DONE FROM THE FIRST STEP ON THE FIRST MAT. UNDER THIS CONDITION, THE MATS SHOULD BE FREE SO THAT THE

SYSTEM WILL ACTIVATE "READY TO ASSESS". THIS KIND OF TEST IS USED TO DETERMINE MAXIMUM SPEEDS IN RACES. IF THE DEPARTURE IS **FROM THE MAT**, THE ATHLETE SHOULD BE STANDING ON THE MAT TO START THE TEST. THE TIME WILL START BEING MEASURED FROM THE MOMENT THE ATHLETE TAKES THE LAST FOOT OFF THE MAT. THIS KIND OF TEST IS USED TO HAVE AN IDEA OF THE ACCELERATION THE ATHLETE HAS WITH A STOPPED DEPARTURE. IN THESE CASES, THE FRONT FOOT AND NOT THE BACK ONE IS THE ONE THAT SHOULD BE PLACED ON THE MAT AT THE DEPARTURE MOMENT. THIS IS DUE TO THE FACT THAT THE FRONT FOOT IS THE ONE BEARING THE BODY WEIGHT, AND IT WILL NOT MAKE THE MEASURING START MISTAKENLY AS THE BACK ONE.



THE TEST CAN BE CANCELLED AT ANY MOMENT PRESSING THE **ESCAPE** KEY.

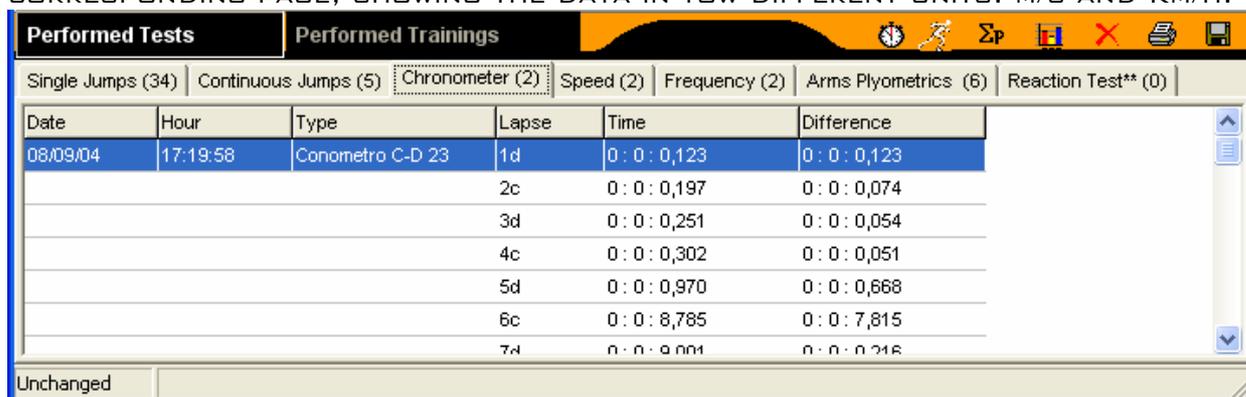
IN BOTH CASES, THE SYSTEM WILL END ITS TIME RECORDING AT THE NEXT TOUCH DOWN, AND IT WILL INSTANTLY CALCULATE THE SPEED AND REPORT IT SO THAT THE USER CAN JUDGE WHETHER THE ATTEMPT DESERVES TO BE SAVED.

THE **DISTANCE CORRECTION** IS USED WHEN IT IS NECESSARY TO CARRY OUT A VERY EXACT SPEED MEASURING, TYPICALLY IN SHORT DISTANCES, FOR EXAMPLE BETWEEN TWO STEPS OR EVEN A JUMPER'S



RUNNING STEPS. THIS CORRECTION WILL BE MADE IF THE DISTANCE BETWEEN THE STEPS IS VERY DIFFERENT FROM THE DISTANCE BETWEEN MATS PREVIOUSLY ESTABLISHED. THIS REAL VALUE BETWEEN TWO STEPS CAN ONLY BE DETERMINED ONCE THE ATHLETE HAS FINISHED IT, AND MEASURING UPON THE MARKS LEFT, FOR EXAMPLE APPLYING CHALK ON THE TRAINERS SOLE. THE WINDOW FOR SUCH CORRECTION APPEARS AFTER FINISHING THE TEST AND IT WILL SHOW THE DISTANCE THE USER HAD ENTERED IN THE INITIAL WINDOW, UNLESS CHANGED.

THE RESULTS OF THIS KIND OF TEST IS CHRONOLOGICALLY STORED IN THE CORRESPONDING PAGE, SHOWING THE DATA IN TOW DIFFERENT UNITS: M/S AND KM/H.



Date	Hour	Type	Lapse	Time	Difference
08/09/04	17:19:58	Conometro C-D 23	1d	0 : 0 : 0,123	0 : 0 : 0,123
			2c	0 : 0 : 0,197	0 : 0 : 0,074
			3d	0 : 0 : 0,251	0 : 0 : 0,054
			4c	0 : 0 : 0,302	0 : 0 : 0,051
			5d	0 : 0 : 0,970	0 : 0 : 0,668
			6c	0 : 0 : 8,785	0 : 0 : 7,815
			7d	0 : 0 : 9,004	0 : 0 : 0,216

4.2.4.1. RANGE OF USES

WE CAN MEASURE SPEED IN AN ENDLESS NUMBER OF SITUATIONS: WITH HANDLING OF THE BALL, WITH DRIBBLING IN HOCKEY, THE LAST STEP BEFORE AND ATHLETIC JUMP, IN A HOME RUN IN SOFTBALL OR BASEBALL, A CYCLIST'S MAXIMUM SPEED WHEN TURNING IN A CYCLING TRACK, ETC.

WITH THIS TOOL WE CAN MEASURE EFFICIENCY IN THE TRANSPORTATION OF THE BALL OR BOWL (DRIBBLING: USEFUL IN BASKETBALL, HANDBALL, HOCKEY, FOOTBALL, ETC.). THE WAY OF DOING THIS IS THE FOLLOWING:

- MARK A TRIANGULAR CLOSED CIRCUIT (OR IN THE SHAPE THAT IS NECESSARY) WITH CONES OR ANY OTHER ELEMENT AND MEASURE THE DISTANCE TRAVELED IN THE LINE WHERE THE ATHLETE WILL RUN.
- PLACE THE MAT(S) AT ONE OF THE CORNERS AND MEASURE THE MAXIMUM SPEED THE ATHLETE IS CAPABLE OF TRAVELING WITHOUT A BALL, TURNING LEFT AND TURNING RIGHT (IT IS COMMON FOR THESE NUMBERS TO VARY). ASSIGN 100% TO THESE SPEED VALUES. TAKE IT SOME TIMES TO HAVE A REPRESENTATIVE DATUM. THEN AVERAGE THE VALUES OBTAINED TURNING LEFT AND RIGHT SEPARATELY.
- THEN MEASURE WITH BALL OR BOWL TRANSPORTATION IN BOTH DIRECTIONS. AVERAGE SEPARATELY AND SET THE EFFICIENCY AVERAGES BASED ON THE PREVIOUS DATUM, BY RULE OF THREE.
- REPORT THE EFFICIENCY IN THE TRANSPORTATION TO THE LEFT AND TO THE RIGHT SEPARATELY, AND THE TEAM'S AVERAGE EFFICIENCY.

THEN THE COACH WILL BE ABLE TO PROGRAM PERSONALIZED TRAINING SESSIONS FOR THE LEAST EFFICIENT OR FOR THOSE HAVING A DEFICIENCY WHEN TURNING TOWARDS ONE OF THE SIDES. REASSESS PERIODICALLY IN ORDER TO CONTROL WHETHER THE TRAINING SESSION IS GENERATING ANY IMPROVEMENT.

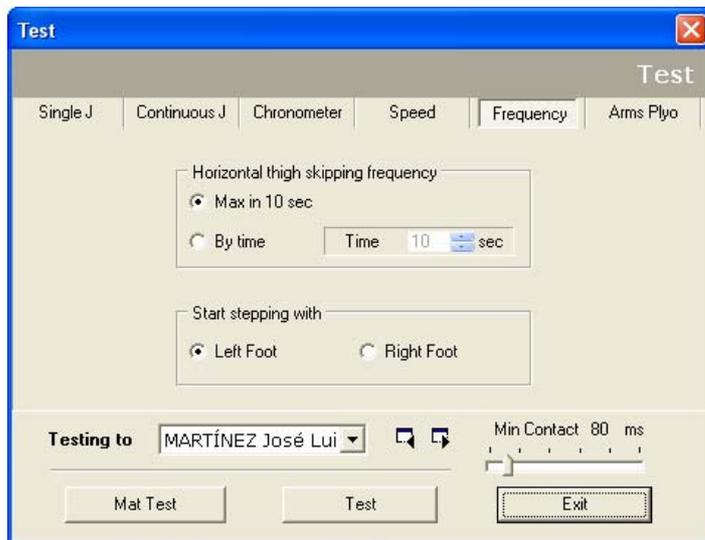
4.2.5. FREQUENCY

FREQUENCY IS ONE OF THE SPEED COMPONENTS, SINCE **SPEED = STEP LENGTH X STEP FREQUENCY** . ALTHOUGH IT IS A GENETICALLY DEPENDENT QUALITY, IT IS POSSIBLE TO TRAIN AND MODIFY IT ON SMALLER SCALES THAN OTHER PHYSICAL QUALITIES, BY MEANS OF SPECIFIC EXERCISES OF CYCLIC MOTION. SKIPPING IS THE



MOST REPRESENTATIVE OF ALL THESE DRILLS, BEING ONE OF THE PREDOMINANT EXERCISES IN THE TRAINING AND TEACHING OF THE SPRINT, PRESENT AT ALMOST ALL THE SPORTS. **UP TO DATE, THIS IS THE ONLY SYSTEM HAVING THIS TYPE OF TEST.**

THE FREQUENCY WITH SPORTIVE PURPOSES IS MEASURED IN STEPS PER MINUTE (SPM) OR CYCLES PER MINUTE (CPM), DEFINING A **CYCLE AS THE SUCCESSION OF TWO STEPS**. IN OTHER WORDS, THE FREQUENCY IN SPM WILL BE TWICE AS HIGH AS THAT IN CPM, ALTHOUGH IT REPRESENTS THE SAME.



IN ORDER TO ASSESS IT, IT HAS TO BE TAKEN INTO ACCOUNT THAT THE SKIPPING SHOULD BE CARRIED OUT UNTIL THE **HIP HEIGHT** IS ACHIEVED, THAT IS, WITH THE KNEES LEVEL WITH THE HIP. THIS EXERCISE IS ALSO KNOWN AS "**HIGH SKIPPING**", SO AS TO DIFFERENTIATE IT FROM THE SKIPPING NOT ACHIEVING THIS HEIGHT. IT IS NECESSARY TO MAKE THIS POINT CLEAR SINCE IT IS IMPOSSIBLE FOR THE SYSTEM TO DISTINGUISH BETWEEN TWO SUCCESSIVE STEPS **IF THE EXERCISE IS DONE WITH LOW KNEES** DUE TO THE SIMULTANEITY OF BOTH FEET ON THE GROUND FOR A COUPLE OF MILLISECONDS. AN ELASTIC BAND

CAN BE HELD OR THE COACH CAN PLACE HIS/HER HANDS AT THE LEVEL DEFINED SO THAT THE SPRITER WILL TOUCH THIS REFERENCE POINT WITH HIS/HER KNEES, UNTIL THE SPORT MOVEMENT IS AUTOMATED. ANOTHER PREMISE IS DOING IT TO THE MOTION MAXIMUM SPEED (FREQUENCY) THAT IS POSSIBLE.



IT CAN BE MEASURED IN TWO DIFFERENT WAYS:

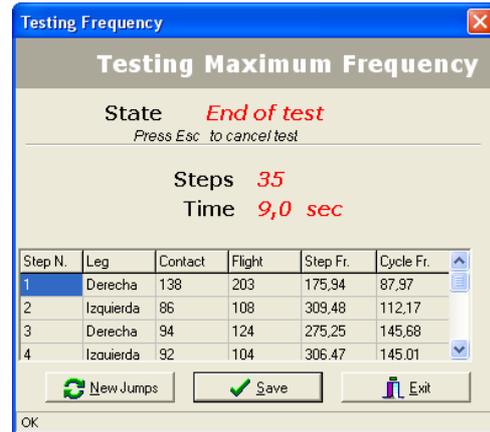
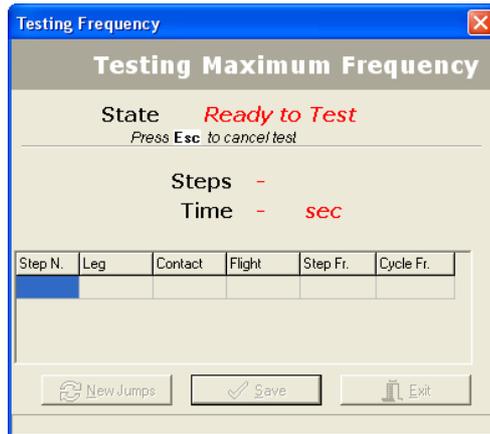
DURING A **MAXIMUM 10-SECOND** TEST WHICH WILL ESSENTIALLY MEASURE WHICH IS THE HIGHEST FREQUENCY PEAK REACHED IN THAT PERIOD OF TIME, APART FROM ALL THE OTHER VARIABLES IN 10 SECONDS.

DURING A **TIME** TEST AIMING AT ASSESSING THE VARIATION IN FREQUENCY AS A CONSEQUENCE OF FATIGUE. IN THIS CASE, THE AVERAGES OF ALL THE VARIABLES ARE REPORTED.

THESE TEST SESSIONS HAVE TO START OFF THE MAT, AS THE CONTINUOUS JUMPS, AND WHEN REACHING THE HIGHEST POSSIBLE FREQUENCY, THE ATHLETE HAS TO STEP ON THE MAT IN ORDER TO START MEASURING. IF, BEFOREHAND, THE PERSON ASSESSING TELLS THE ATHLETE WITH WHICH FOOT TO STEP ON THE MAT, IT IS POSSIBLE TO OBTAIN EXTRA INFORMATION ABOUT THE ASYMMETRIES EXISTING BETWEEN BOTH LIMBS.

THE TEST WINDOW IS SIMILAR TO THOSE SEEN SO FAR:





WHEN FINISHING THE LIMIT CONDITION, THE WINDOW WILL SHOW THE REPRESENTATIVE VALUES OF THE TEST IN THE LAST THREE LINES SO THAT THEY CAN BE JUDGED. AS IN THE PREVIOUS TEST SESSIONS, THE BUTTON “SAVE” LEAVES THE SYSTEM READY TO ASSESS AGAIN.

THE TESTS ARE SAVED IN THE CORRESPONDING SHEET, AND THEY SHOW A SUMMARY IN THE FIRST THREE LINES. THIS SUMMARIZED INFORMATION IS DIFFERENT ACCORDING TO THE TYPE OF TEST:

- IF THE **TEST HAS BEEN A MAXIMUM 10-SECOND ONE**, THE FIRST LINE WILL SHOW THE **MAXIMUM VARIABLES** OBTAINED IN THE STEP FREQUENCY AND IN THE CYCLE FREQUENCY, AND THE AVERAGE OF THE PERFORMANCE PERCENTAGE WILL BE SHOWN. THE VARIABLES OF TOUCH DOWN TIME (GROUND) AND FLIGHT ARE NOT SHOWN.

- IF THE **TEST HAS BEEN A TIME ONE**, THE FIRST LINE WILL SHOW THE **AVERAGE VARIABLES** OBTAINED IN THE STEP FREQUENCY, CYCLE FREQUENCY AND PERFORMANCE.

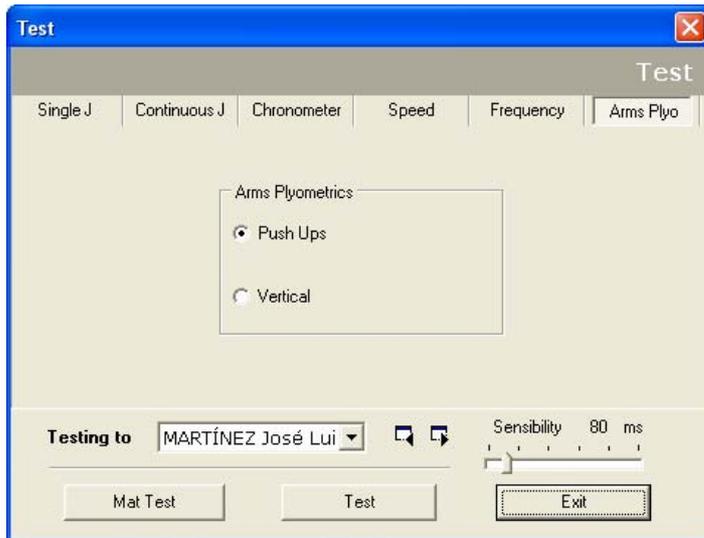
IN BOTH CASES, THE NEXT TWO LINES WILL SHOW SEPARATELY THE **AVERAGE VALUES** OBTAINED FOR EACH LIMB, AIMING AT DETECTING BILATERAL ASYMMETRIES.

Performed Tests		Performed Trainings									
Date	Hour	Type	Steps	Time	Leg	Contact	Flight	Step Fr.	Cycle Fr.	%Perf.	
16/02/05	18:50:57	Maximum	35	9,48	[Both]	[]	[]	[392,91]	[191,88]	[89]	
					[Ciclo Izq]	[93]	[87]		[179,87]		
					[Ciclo Der]	[93]	[82]		[180,21]		
			1		Derecha	81	80	350,15	180,12	90	
			2		Izquierda	97	86	340,39	174,20	89	

4.2.6. UPPER LIMBS PLYOMETRICS

SIMILARLY TO THE TAKE-OFF MEASUREMENTS IN SINGLE JUMPS, IT IS POSSIBLE TO ASSESS THE TAKE-OFF WITH THE UPPER LIMBS IN A TAKE-OFF EXERCISE IN PUSH-UPS. THIS TEST OF THE UPPER LIMBS POWER IS VERY USEFUL IN COMBAT SPORTS, THROWING AND RUGBY, AMONG OTHER SPORTS.





THIS KIND OF TEST HAS TWO TYPES: REGULAR PUSH-UPS AND VERTICAL BODY PUSH-UPS (THERE ARE PHOTOS BELOW SHOWING BOTH KINDS OF EXERCISES)

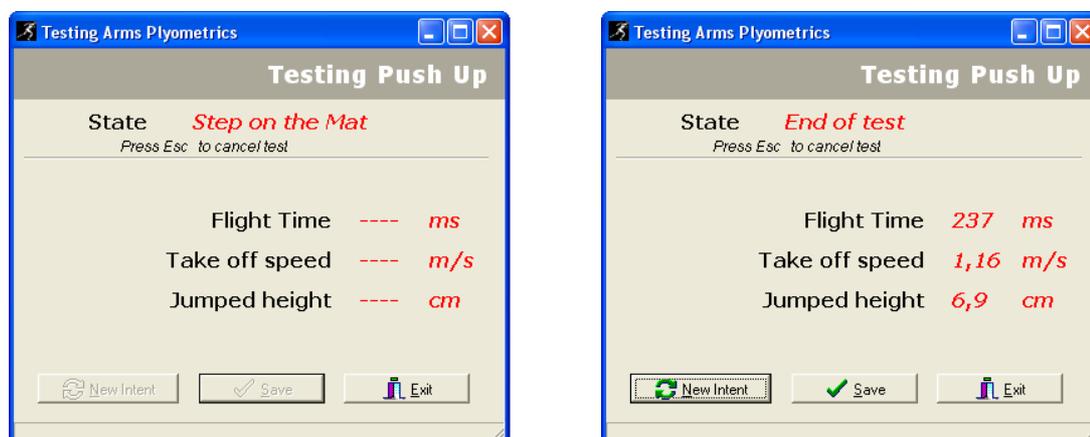
PAY SPECIAL ATTENTION TO SENSITIVITY: THESE TEST SESSIONS ARE CHARACTERIZED BY THEIR LOW FLIGHT TIME, THEREFORE, THIS TIME NEEDS SETTING IN AN ACCURATE WAY.



VERTICAL BODY PUSH-UPS ARE CHARACTERISTIC EXERCISES OF POLE-VAULTERS AND GYMNASTS. THEY CAN ALSO BE PERFORMED WITH THE FEET LEANT AGAINST THE WALL.



CARRY OUT THIS TYPE OF TEST IN A SIMILAR WAY TO THE PREVIOUS ONES. THE TEST WINDOW WILL INDICATE WHETHER IT IS NECESSARY TO STEP ON THE MAT TO START THE TEST. SUCH WINDOW WILL SHOW THE TEST RESULTS ONCE IT HAS BEEN FINISHED SO THAT IT CAN BE JUDGED.



THE TESTS ARE CHRONOLOGICALLY SAVED IN THE CORRESPONDING SHEET. THE VARIABLES TO SAVE ARE HEIGHT, SPEED AND FLIGHT TIME OF VERTICAL PUSH-UPS.

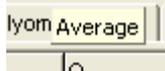
Evaluaciones Realizadas		Entrenamientos Realizados									
Fecha	Hora	Tipo	Vuelo	Altura	Velocidad						
02/09/04	19:41:41	Push Up	212	5,5	1,04						
02/09/04	19:42:01	Push Up	249	7,6	1,22						
02/09/04	19:42:12	Push Up	279	9,5	1,37						
02/09/04	19:42:30	Push Up	298	10,9	1,46						
02/09/04	19:42:36	Push Up	278	9,5	1,37						
02/09/04	19:42:40	Push Up	282	9,8	1,39						

4.2.7. TESTS AVERAGES

THIS TOOL ALLOWS GENERATING INTRA-INDIVIDUAL AVERAGES OF THE SINGLE-VALUE TESTS THAT ARE WISHED. EACH AVERAGE VALUE IS ADDED TO THE TEST LIST WITH THE DATE AND TIME WHEN IT WAS CREATED. IN THIS LINE **THERE IS NO INFORMATION AS REGARDS THE VALUES THAT HAVE BEEN AVERAGED**. THIS MEANS THAT WHEN HAVING A GREAT NUMBER OF TESTS, IT IS IMPOSSIBLE TO KNOW WHICH WERE THE TESTS AVERAGED IN EACH OF THESE LINES. THIS IS WHY IT CAN BE USEFUL TO MAKE AN AVERAGE AFTER FINISHING THE FIELD TEST, SO AS TO OBTAIN A REPRESENTATIVE VALUE THAT DAY. THESE AVERAGE VALUES ARE USEFUL WHEN HAVING TO MAKE A GRAPH OF THE ATHLETE'S EVOLUTION OR WHEN MAKING A GROUP AVERAGE: INSTEAD OF TAKING THE BEST VALUE OF AN TEST SESSION, THE AVERAGE CAN BE TAKEN. THESE VALUES CAN BE GENERATED AND DELETED ONCE THEY HAVE BEEN USED TO WRITE A REPORT.



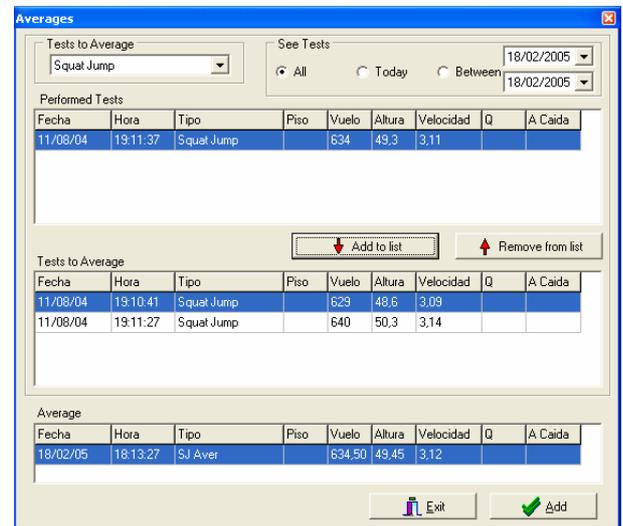
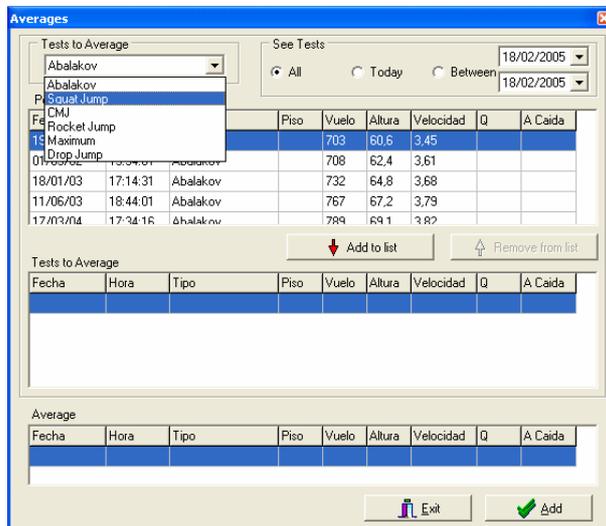
WHEN CLICKING ON THIS BUTTON, THE FOLLOWING DIALOG WINDOW IS OPENED.



IN IT, WE CAN IDENTIFY A HEADING THAT ALLOWS US TO FILTER THE TESTS IN ORDER TO LIST ONLY THOSE WE ARE INTERESTED IN: AS A FIRST FILTERING CONDITION WE ESTABLISH THE **TYPE OF TEST** WE WISH TO AVERAGE, WHICH



HAS TO BE CHOSEN FROM A LIST. IT IS ONLY POSSIBLE TO AVERAGE SINGLE-VALUE TESTS, THAT IS TO SAY, **THE CONTINUOUS JUMPS, FREQUENCY AND CHRONO TESTS ARE EXCLUDED**. THIS WINDOW ALWAYS CHOOSES THE TYPE OF TEST FROM THE ACTIVE SHEET, FOR INSTANCE, IF WE HAVE THE UPPER LIMBS PLYOMETRICS SHEET ON TOP OF THE CASCADE ARRANGEMENT, THIS DIALOG WILL SHOW THE POSSIBILITY OF AVERAGING PUSH-UPS AND VERTICAL PUSH-UPS.



TO THE RIGHT OF THE KIND OF JUMP, YOU CAN FIND THE FILTER OPTIONS THAT HAVE TO DO WITH THE DATE OF THE TEST. USING THESE CONTROLS, WE CAN LIST THE TESTS THAT WERE CARRIED OUT ON A SPECIFIC RANGE OF DATES, ALL OF THEM OR THOSE CARRIED OUT TODAY.

BELOW THIS HEADING THERE ARE THREE AREAS: THE FIRST IS THE ONE WITH THE **TESTS CARRIED OUT** WHICH FULFILL THE FILTER CONDITION. THEN YOU CAN FIND THE SECOND AREA, WHERE THE **TESTS TO BE AVERAGED** CAN BE FOUND. THESE HAVE BEEN PICKED FROM THE FIRST LIST. FINALLY, WE CAN FIND THE AVERAGE AS IT HAS BEEN CALCULATED. IN ORDER TO ADD A VALUE TO THE AVERAGE, YOU SIMPLY HAVE TO SELECT THE TEST YOU WANT AND CLICK ON **"ADD TO THE AVERAGE"**. **EACH TEST ADDED TO THE AVERAGE IS TAKEN FORM THE FIRST LIST** SO AS TO AVOID ANY CONFUSION ARISING FROM THE DOUBLE SELECTION OF THE SAME TEST. IF YOU WISH TO REMOVE AN TEST FROM THE AVERAGE CALCULATION, YOU NEED TO SELECT IT FROM THE SECOND AREA AND CLICK ON **"REMOVE FROM THE AVERAGE"**. THESE TWO ACTIONS CAN BE REPLACED BY CLICKING TWICE ON THE TEST DESIRED IN THE AREA IN WHICH IT IS FOUND. ONCE ALL THE DESIRED CONDITIONS HAVE BEEN ESTABLISHED, THE **"ADD"** BUTTON ADDS THE AVERAGE TO THE LIST OF CARRIED OUT TESTS AS IF IT WERE ONE MORE. THE WINDOW REMAINS OPEN IN ORDER TO GRANT A NEW AVERAGE. ONCE ALL THE NECESSARY AVERAGES HAVE BEEN TAKEN, THE **"EXIT"** BUTTON WILL TAKE US BACK TO THE ATHLETE WINDOW.

Fecha	Hora	Tipo	Piso	Vuelo	Altura	Velocidad	Q	A Caida
11/08/04	19:43:41	Maximum	189	706	61,1	3,46	3,74	
11/08/04	19:44:03	Maximum	169	720	63,5	3,53	4,262	
11/08/04	19:55:26	CMJ Aver		662,00	53,80	3,25		
11/08/04	19:56:34	Rocket Jump Aver		637,00	49,73	3,12		
11/08/04	19:56:39	Maximum Aver	193,75	716,50	62,95	3,52	3,73	
08/09/04	18:22:54	Drop Jump	281	673	55,6	3,3	2,396	35

WITHIN YOUR TESTS, A RECORD WITH THE AVERAGED VALUE WILL BE ADDED. THIS RECORD CAN BE TREATED AS IF IT WERE ANOTHER TEST.



4.3. PLYOMETRIC TRAINING SESSIONS

THE PLYOMETRIC TRAINING SESSIONS OR MULTIJUMPS ARE CURRENTLY AN ESSENTIAL TOOL FOR IMPROVING THE REACTIVE FORCE, AMONG OTHER QUALITIES. THESE SESSIONS CAN BE CARRIED OUT ON ANY KIND OF SURFACE, AND THEY ARE DOSED ACCORDING TO THE TRAINING PERIOD, SPORT AND EXPERIENCE ACCUMULATED IN THE ATHLETE.



THESE SESSIONS ARE USUALLY QUANTIFIED ACCORDING TO THE NUMBER OF JUMPS DISTRIBUTED IN SERIES. THE PROBLEM IS THAT THERE ARE MANY VARIABLES THAT SLIP OUT, SUCH AS:

HAVE THE JUMPS BEEN PERFORMED ON DEMANDING HEIGHTS FOR THE ATHLETE?

HAVE THE PAUSES BEEN CONTROLLED?

HAVE THE TOUCH DOWNS BEEN TOO HIGH?



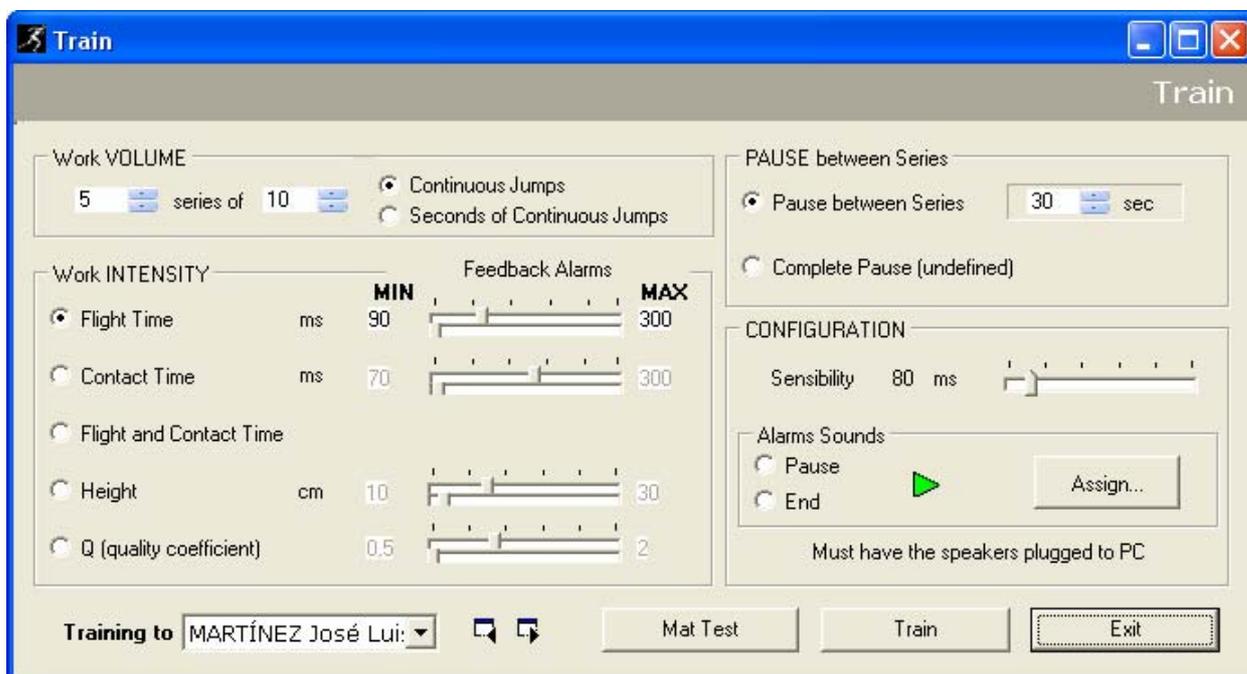
WITH THE **AXONJUMP** SYSTEM, IT IS POSSIBLE TO PLAN, CONTROL, RECORD AND GRAPH EACH PLYOMETRIC SESSION SO AS TO CONTROL THE GREATEST NUMBER OF TRAINING VARIABLES BETTER. THE ATHLETE CAN EVEN EXECUTE THEM ALONE, AND SAVE THE RECORDS FOR ITS LATER ANALYSIS.

FROM THE SOFTWARE, IT IS POSSIBLE TO VARY THE VOLUME OR NUMBER OF JUMPS, THE INTENSITY AND THE PAUSES BETWEEN THESE SESSIONS SERIES. THESE VARIABLES WILL TURN INTO THE INSTRUCTIONS THE ATHLETE HAS TO CARRY OUT. THE SESSIONS WILL DEVELOP INDEPENDENTLY FROM THE FACT THAT THE INSTRUCTIONS ARE OR ARE NOT CARRIED OUT. WHILE PERFORMING, THE ATHLETE GETS INFORMATION IN REAL TIME IN TWO WAYS: THROUGH THE SCREEN, WHICH WILL GIVE INFORMATION ABOUT THE INTENSITY OF THE PERFORMANCE, AND THROUGH THE PC SOUND, WHICH WILL INDICATE HIM/HER THE START AND END OF EACH SERIES.





EVERYTHING IS PROGRAMMED FROM THE TRAINING SESSIONS WINDOW: THESE WINDOW IS OPENED FROM THE MAIN MENU WITH THE “TOOLS” OPTION OR FROM THE ATHLETE’S TOOLBAR.



THE **WORK VOLUME** ALLOWS ENTERING THE NUMBER OF JUMPS THAT WILL BE MADE IN THE SESSION, AND THE WAY IN WHICH THEY WILL BE DISTRIBUTED IN EQUAL SERIES. THIS NUMBER OF JUMPS CAN BE SET IN AN ACCURATE WAY OR IN A TIME WAY, DURING WHICH THE ATHLETE WILL HAVE TO PERFORM THE JUMPS TO HIS/HER MAXIMUM INTENSITY.

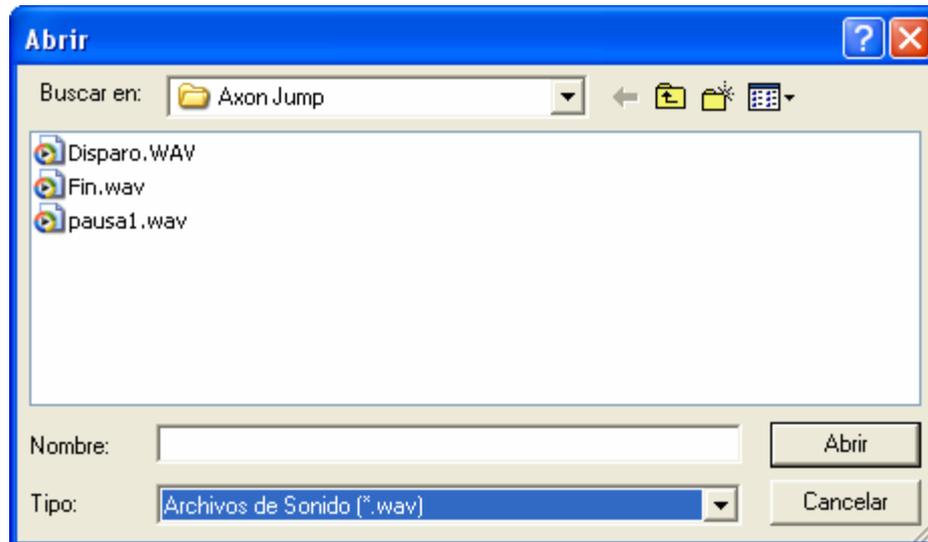
THE **WORK INTENSITY** ALLOWS CHOOSING THE VARIABLE TO BE TAKEN INTO ACCOUNT IN ORDER TO CONSIDER THE TRAINING HARDNESS. THE VARIABLE(S) TO CHOOSE ARE: FLIGHT TIME, TOUCH DOWN (CONTACT) TIME, BOTH, HEIGHT OR THE QUALITY QUOTIENT $Q = T_f / T_c$. IN ALL OF THEM, THE WORK ZONE HAS TO BE ESTABLISHED BY MEANS OF TWO THRESHOLDS: THE MINIMUM AND THE MAXIMUM. THESE THRESHOLDS ARE ESTABLISHED THROUGH TWO SLIDING HORIZONTAL BARS AND THEY WILL BE USEFUL FOR THE VISUAL FEEDBACK WITH THE ATHLETE. IN CASE IT IS DECIDED TO CONTROL BOTH THE FLIGHT TIME AND TOUCH DOWN TIME AT THE SAME TIME, THESE VALUES NEED TO BE ESTABLISHED WITH THE FIRST TWO SLIDING BARS SINCE THEY DIFFER IN THEIR LIMITS.

THE **PAUSE BETWEEN SERIES** ALLOWS ENTERING THE AMOUNT OF TIME TO WAIT BETWEEN TWO CONSECUTIVE SERIES. THE MAT DOES NOT RECORD ANYTHING DURING THESE PAUSES. WHEN FINISHING AND STARTING THE SERIES, TWO DIFFERENT SIDES WILL BE HEARD THAT WILL LET THE ATHLETE PERFORMING KNOW. THE COMPLETE OR **INDEFINITE PAUSE** MEANS THE PROGRAM WILL WAIT FOR THE ATHLETE ALL THE TIME S/HE WANTS, THE MAT REMAINING ACTIVE TO RECORD THE PRESENCE OF A NEW JUMP, WHICH WILL SIGNAL THE BEGINNING OF THE NEW SERIES. HOWEVER, THESE TIMES WILL REMAIN RECORDED FOR THEIR LATER ANALYSIS.

THE **CONFIGURATION** ALLOWS ESTABLISHING TWO BASIC ISSUES: THE INSTRUMENT **SENSITIVITY**, WHICH IS USEFUL TO REMOVE DOUBLE JUMPS AND REBOUNDS BETWEEN CONTACTS IN THE CELL AND THE **ALARM SOUNDS**, WHICH ALLOWS CHANGING THE PRE-ESTABLISHED SOUNDS FOR THOSE THE USER WANTS. THESE TWO SOUNDS CAN BE



EXECUTED WITH THE GREEN “PLAY” BUTTON SO THAT THE ATHLETE IS AWARE OF THEM BEFOREHAND. IN ORDER TO CHANGE THEM, SIMPLY CLICK ON THE **ASSIGN...** BUTTON, WHICH WILL SHOW THE FOLLOWING DIALOG:



FROM HERE, IT IS POSSIBLE TO CHOOSE OTHER SOUNDS WHICH ARE IN ANY OTHER FOLDER OF YOUR PC. TAKE INTO ACCOUNT THEIR LENGTH SINCE THE PROGRAM RESUMES CONTROL AFTER FINISHING ITS EXECUTION. THE FORMAT IS THE “.WAV” AUDIO STANDARD.

ONCE EVERYTHING HAS BEEN SET TO START THE SESSION, THE PROGRAM WILL RUN AS IF IT WERE ANOTHER TEST SESSION. WHEN CLICKING ON **TRAINING**, YOU WILL SEE THE FOLLOWING WINDOW:



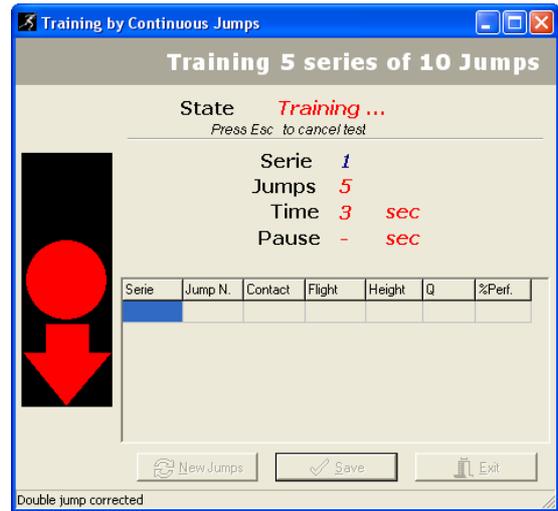
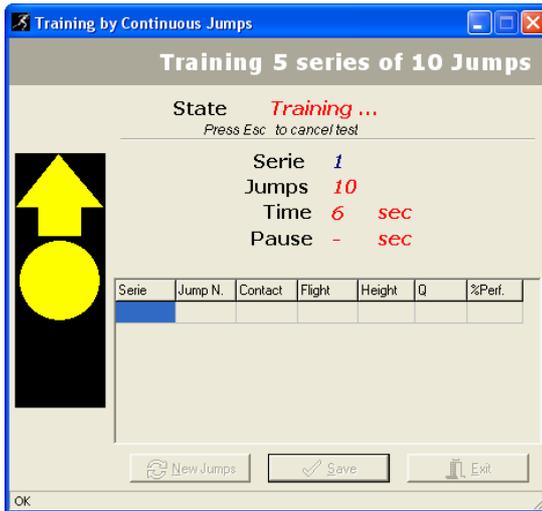
THE TRAINING PROPOSED AND THE STATUS CAN BE READ IN THE HEADING: IN THIS CASE IT IS “READY TO JUMP”. BELOW THAT, YOU WILL SEE THE **SERIES** NUMBER WHICH IS CURRENTLY BEING EXECUTED, THE NUMBER OF **JUMPS** AND THE **TIME** ELAPSED SO FAR IN THE SERIES, AND IN THE CASE OF A **PAUSE**, THE TIME ELAPSED SINCE THE END OF THE SERIES. THIS NUMBER IS USUALLY RED, AND IT CHANGES INTO GREEN THE MOMENT THE PAUSE FINISHES, INDICATING IT IS ENABLED AND WAITING FOR STARTING TO JUMP.

BELOW THIS GENERAL INFORMATION, THE INFORMATION SHEET CAN BE SEEN AS IT WILL BE SAVED IN THE ATHLETE’S FILE. THIS INFORMATION HAS THE SAME STRUCTURE AS THAT OF THE CONTINUOUS JUMPS, EXCEPT FOR

THE SERIES NUMBER THAT IS ADDED. TO THE LEFT OF THIS INFORMATION, YOU WILL SEE A GREEN CIRCLE ON BLACK BACKGROUND, WHICH IS THE SYMBOL OF THE JUMPS PERFORMED WITHIN THE ESTABLISHED MARGINS. THIS GRAPHIC INFORMATION IS UPDATED JUMP AFTER JUMP THE MOMENT THE ATHLETE LANDS AFTER EACH JUMP SO AS TO CREATE VISUAL FEEDBACK WITH THE ATHLETE. THIS IS USEFUL FOR THE ATHLETE TO GRADE HIS/HER STRENGTH AS IT WAS PROPOSED AT THE BEGINNING.

IF A JUMP IS ABOVE THE INSTRUCTIONS GIVEN, THE CIRCLE WILL BECOME YELLOW AND AN ARROW POINTING UPWARDS WILL APPEAR AS A WARNING SIGNAL SINCE THE JUMP IS BEING MADE HIGHER THAN WHAT HAS BEEN DEMANDED. ON THE CONTRARY, IF A JUMP IS BELOW THE INSTRUCTIONS GIVEN, THE CIRCLE WILL BECOME RED, AND AN ARROW





POINTING DOWNWARDS WILL BE SHOWN SIGNALING THE JUMP HAS BEEN LOWER THAN EXPECTED.

DURING THE ATHLETE'S PAUSES IT IS POSSIBLE TO OBSERVE THE VALUES OF THE VARIABLES OBTAINED IN THE SESSION TOGETHER WITH THEIR AVERAGE.



AS IN ANY TEST, THE **ESCAPE** KEY PRESSED DURING EXECUTION TIME CANCELS THE CURRENT TEST (YOU MAY HAVE TO WAIT A FEW SECONDS), AND THE INFORMATION OBTAINED SO FAR WILL BE SHOWN SO THAT IT CAN BE JUDGED. ANOTHER WAY OF CANCELING THE TEST IS STEPPING OUT OF THE MAT FOR A SECOND: THE PROGRAM WILL UNDERSTAND IT IS NOT POSSIBLE THAT THE ATHLETE IS OUT OF THE MAT FOR SO MUCH TIME AND SO IT WILL CANCEL THE TRAINING SESSION.

WHEN TRAINING IS FINISHED, A DIFFERENT SOUND LETS THE ATHLETE KNOW THE SESSION HAS ENDED, WHILE ALL THE INFORMATION TO BE SAVED APPEARS IN THE WINDOW, INCLUDING THE INDIVIDUAL AVERAGES OF EACH SERIES AND THE AVERAGE OF ALL THE VARIABLES OF ALL THE SERIES. THESE DATA ARE SAVED IN THE TRAINING SHEET AS THE CONTINUOUS JUMPS, EXCEPT FOR THE ADDITION OF THE LINES CONTAINING THE SERIES AVERAGES AND THE TOTAL AVERAGE. AS WITH THE SERIES JUMPS, CLICKING ON THE TRAINING SESSION WILL SELECT THE WHOLE SET OF DATA.

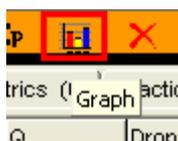


Performed Tests		Performed Trainings									
Trainings (1)											
Date	Hour	Type	Series	Jumps	Pause	Time	Contact	Flight	Height	Q	%Perf.
07/09/04	19:57:31	By Time	5	188	30	30	[167]	[547]	[37,84]	[3,63]	[72]
			1	1			1161	262	54,4	0,226	21
			1	2			246	304	53,3	1,236	23
			1	3			251	319	54,4	1,271	29
			1	4			203	369	56,7	1,818	30
			1	5			208	326	54	1,567	30
			1	6			201	317	54,3	1,577	26
			1	7			226	297	53,8	1,314	27

THE PERFORMANCE PERCENTAGE IS CALCULATED BASED ON THE BEST Q PERFORMED IN A JUMP OF EACH SERIES. THIS MEANS THAT IN EACH SERIES THIS REFERENCE TO THE BEST JUMP WILL CHANGE. THIS CURVE (WHEN IT IS GRAPHED) IS SOFTENED BY A THIRD-ORDER MOVING AVERAGE DIGITAL FILTER, WHICH MEANS THAT EACH VALUE IS AVERAGED WITH THE PREVIOUS AND THE NEXT ONES IN ORDER TO OBTAIN A SLIGHT CURVE.

4.4. GRAPHS

USING THIS SOFTWARE, IT IS POSSIBLE TO CREATE DIFFERENT KINDS OF GRAPHS WHICH PROVE REALLY USEFUL WHEN OBSERVING THE RESULTS. THE DIFFERENCE AMONG THEM IS FOUND IN THE VARIABLE THAT IS FOUND IN THE X-AXIS. THE WAY TO GRAPH HAS BEEN DESIGNED IN AN INTUITIVE SIMPLE FORM.



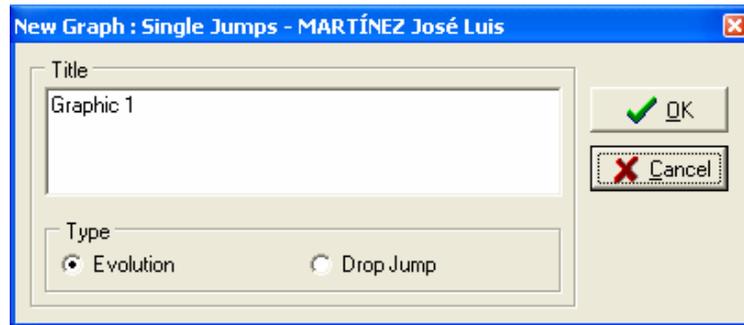
TO CREATE A GRAPH, JUST CLICK ON THE CORRESPONDING BUTTON, SELECT THIS OPTION FROM THE "TOOLS" MENU OF THE MAIN MENU, OR ACCESS TO IT CLICKING THE RIGHT BUTTON OF THE MOUSE ON AN TEST OR TRAINING SESSION.

Performed Tests		Performed Trainings									
Single Jumps (34) Continuous Jumps (5) Chronometer (2) Speed (2) Frequency (2) Arms Plyometrics (6) Reaction Test** (0)											
Date	Hour	Type	Contact	Flight	Height	Speed	Q	Drop H			
19/04/02	18:43:55	Abalakov		703	60,6	3,45					
01/09/02	15:34:01	Abalakov		708	62,4	3,61					
18/01/03	17:14:31	Abalakov									
11/06/03	18:44:01	Abalakov									
17/03/04	17:34:16	Abalakov									
11/08/04	18:59:49	CMJ									
11/08/04	18:55:11	CMJ		660	53,5	3,24					

THE PROGRAM UNDERSTANDS YOU WISH TO MAKE A GRAPH ON THE TEST OR TRAINING SHEET THAT IS ACTIVE AT THAT MOMENT. THIS MEANS THAT IF WE WANT TO GRAPH, FOR INSTANCE, CONTINUOUS JUMPS, WE NEED TO HAVE THAT SHEET ON TOP OF THE CASCADE. IF THE SHEET THAT IS ON TOP DOES NOT CONTAIN TESTS, THE "GRAPH" BUTTON WILL NOT EXECUTE ANY ACTION.

NEXT, A DIALOG WINDOW WILL ASK FOR A NAME TO IDENTIFY THE GRAPH AMONG OTHERS. THIS NAME WILL BE THE TITLE OF THE FUTURE GRAPH (IT CAN BE CHANGED AFTERWARDS). THE PROGRAM WILL ALWAYS SUGGEST A DIFFERENT NAME USING NUMBERS, SO THE GRAPH CAN BE IDENTIFIED WHEN MAKING A SELECTION FOR A PRINTED REPORT. IT IS IMPORTANT THAT THE USER GIVES THE GRAPH A NAME WHICH WILL THEN REMIND HIM/HER OF ITS CONTENT.



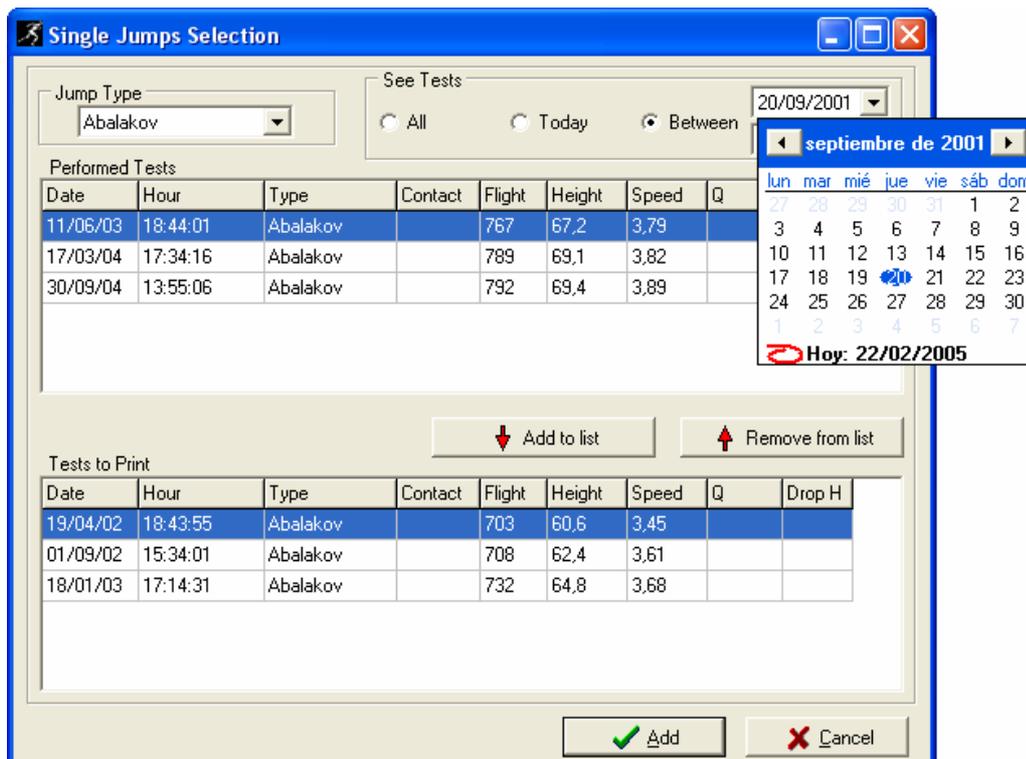


4.4.1. ON EVOLUTION

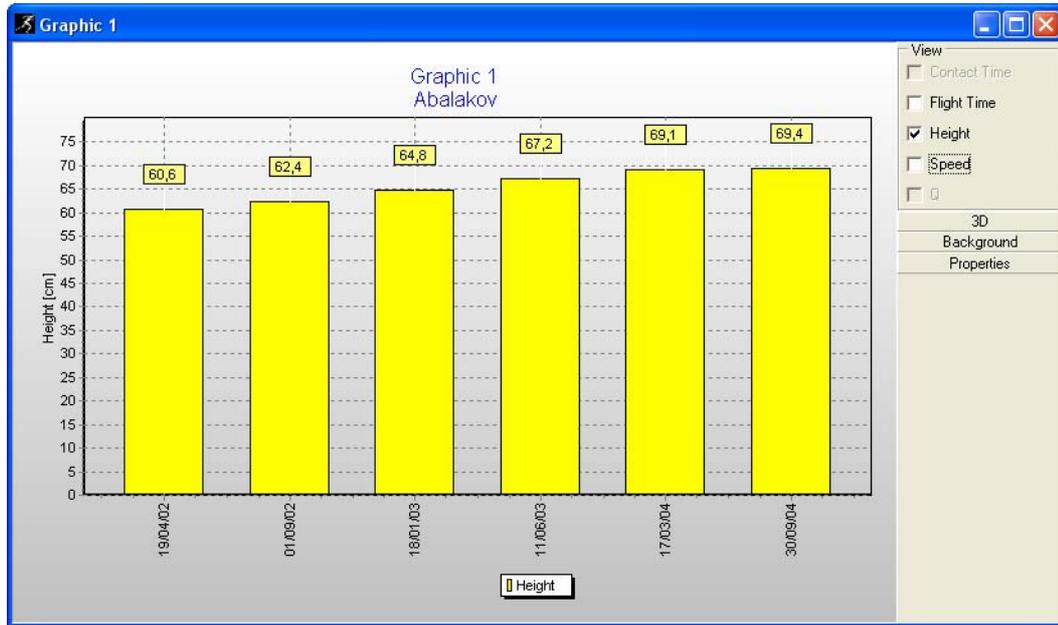
THEY SHOW THE EVOLUTION OF ONE OR MORE VARIABLES OF A SPECIFIC SINGLE-VALUE TEST THROUGHOUT A PERIOD OF TIME ESTABLISHED BY THE USER. **THE DATES OF THE TESTS ARE THE X-AXIS (HORIZONTAL)**, WHILE THE SELECTED VARIABLE(S) OF A TYPE OF SINGLE JUMP, SPEED OR UPPER LIMBS PLYOMETRICS ARE IN THE Y-AXIS (VERTICAL). THIS IS THE MOST COMMON TYPE OF GRAPH.

ONCE THE NAME OF THE GRAPH HAS BEEN GIVEN, A WINDOW APPEARS THAT ALLOWS ESTABLISHING A FILTER WHICH IS SIMILAR TO THE ONE USED IN THE AVERAGE TOOL. THE FIRST THING TO DEFINE IS THE TYPE OF TEST ABOUT WHICH YOU WISH TO REPORT THE EVOLUTION, SINCE IT IS **NOT POSSIBLE TO COMPARE DIFFERENT TYPES OF TESTS IN THE SAME GRAPH**.

TWO AREAS CAN BE SEEN IN THIS WINDOW: THE FIRST ONE ARE THE TESTS FULFILLING THE FILTER CONDITION AND THE SECOND, BELOW, ARE THE TESTS THAT HAVE BEEN SELECTED. AS IN THE "AVERAGE" TOOL, THE SELECTION OF A TEST IN THE FIRST AREA MAKES IT DISAPPEAR FROM THE FIRST LIST TO AVOID CONFUSIONS DUE TO REITERATION. IF YOU WISH TO ESTABLISH DATES CONTAINING THE TESTS DESIRED, CLICK ON THE LIMIT DATES AND CALENDARS WILL APPEAR WITH WHICH YOU CAN CHANGE THE YEAR, MONTH AND DAY USING THE ARROWS (TO CHANGE THE MONTH), AND WHEN CLICKING ON THE YEAR, THE ARROWS TO CHANGE IT WILL APPEAR. THE "ADD" BUTTON CREATES THE GRAPH REQUESTED WITH THE SELECTED VALUES.



THE "CANCEL" BUTTON GOES BACK TO THE PREVIOUS STEP WITHOUT EXECUTING ANY KIND OF ACTION.



THE TYPE OF JUMP OR TEST SELECTED WILL BE SHOWN IN THE SUBTITLE LINE (EDITABLE).

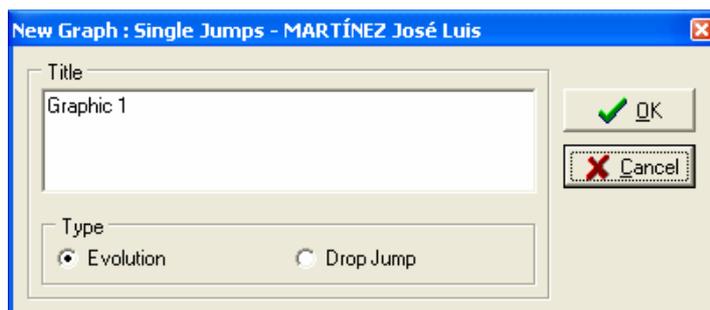
THE CONTROLS ON THE RIGHT ARE USED FOR SELECTING THE VARIABLES TO BE GRAPHED. EACH VARIABLE IS ASSOCIATED WITH A COLOR, WHICH IS SHOWN BELOW THE X-AXIS, WITHIN A RECTANGLE.

IT IS POSSIBLE TO SELECT OR UNSELECT EACH VARIABLE BY CLICKING THE MOUSE ON THE CORRESPONDING CHECK BOX. IF TWO OR MORE VARIABLES OF VERY DIFFERENT RANGES ARE SELECTED, A DOUBLE Y-AXIS WILL APPEAR SO AS TO HAVE A DIFFERENT REFERENCE SCALE FOR EACH OF THEM. THE AXIS ON THE RIGHT WILL ALWAYS BE THAT ONE OF THE LAST VARIABLE LISTED IN THAT ZONE OF THE WINDOW.

THE OPTIONS BELOW ARE DESCRIBED IN DETAIL IN [SECTION 4.4.8.](#)

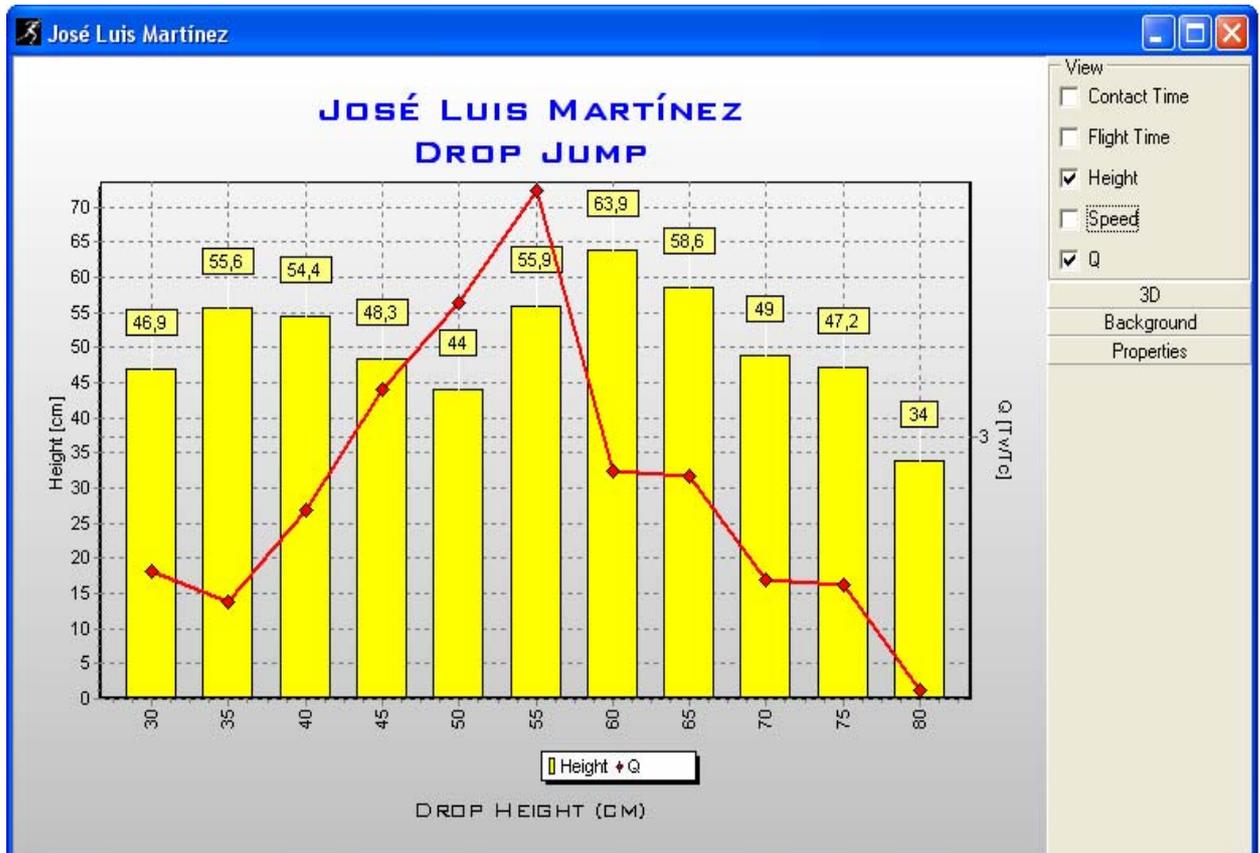
4.4.2. ON DROP JUMPS

THEY ALLOW COMPARING DROP JUMPS FROM DIFFERENT DROP HEIGHTS AIMING AT PICKING WHICH THE BEST HEIGHT FOR THE PLYOMETRIC TRAINING IS. **IN THE X-AXIS WE ALWAYS HAVE THE DROP HEIGHT IN AN INCREASING ORDER.** IN THE Y-AXIS WE HAVE THE JUMPS SELECTED VARIABLES. IF THE ATHLETE SELECTED HAS DROP JUMPS IN HIS/HER SINGLE JUMPS SHEET AND THIS IS ACTIVE, WHEN THE "GRAPH" BUTTON IS CLICKED ON, THE FOLLOWING DIALOG WINDOW WILL APPEAR:



THIS SELECTION IS NECESSARY SINCE THE SYSTEM NEEDS TO KNOW IF THE USER WANTS TO GRAPH THE DROP JUMPS EVOLUTION OF THE DROPS JUMPS WITH THEIR DROP HEIGHT. SIMILARLY, THE DROP JUMPS HAVE TO BE SELECTED FROM THE ATHLETE'S PERFORMED TESTS' SHEET, FROM A WINDOW WHICH IS ALIKE TO THE ONE SHOWN ABOVE.

THE GRAPH OBTAINED IS SIMILAR TO THE PREVIOUS ONE, EXCEPT FOR THE ADDITION OF MORE VARIABLES TO GRAPH ABOVE ON THE RIGHT. THIS IS DUE TO THE FACT THAT THE DROP JUMP HAS SOME MORE VARIABLES WHICH ARE RECORDED.



THE Q RELATION IS AN IMPORTANT DATUM WHEN IT COMES TO SELECTING HEIGHTS FOR TRAINING SESSIONS, SINCE IT DETERMINES THE DROP HEIGHT FROM WHICH THE ATHLETE IS MORE TIME IN THE AIR IN RELATION TO THE TIME S/HE IS TOUCHING DOWN THE GROUND.

ANOTHER IMPORTANT ISSUE IS TO KNOW FROM WHICH DROP HEIGHT THE ATHLETE CAN JUMP HIGHER, OR FROM WHICH DROP HEIGHT THE TOUCH DOWN TIME IS THE LOWEST.

ATHLETES WITH SIMILAR PERFORMANCES MAY HAVE VERY DIFFERENT OPTIMUM DROP HEIGHTS, TO BE USED IN PLYOMETRIC TRAINING SESSIONS. THIS INFORMATION CAN BE USED FOR THE TRAINER TO DISTRIBUTE ATHLETES IN DIFFERENT TASKS (HURDLES' HEIGHTS) OR TRAINING PLACES.

4.4.3. ON CONTINUOUS JUMPS

IT ALLOWS SEEING THE EVOLUTION OF THE VARIABLES SELECTED IN THE PERFORMING OF CONTINUOUS JUMPS. IN THE X-AXIS THE JUMP NUMBER AND THE TIME ELAPSED ARE REPRESENTED, WHILE IN THE Y-AXIS WE HAVE THE VARIABLES SELECTED BY THE USER.

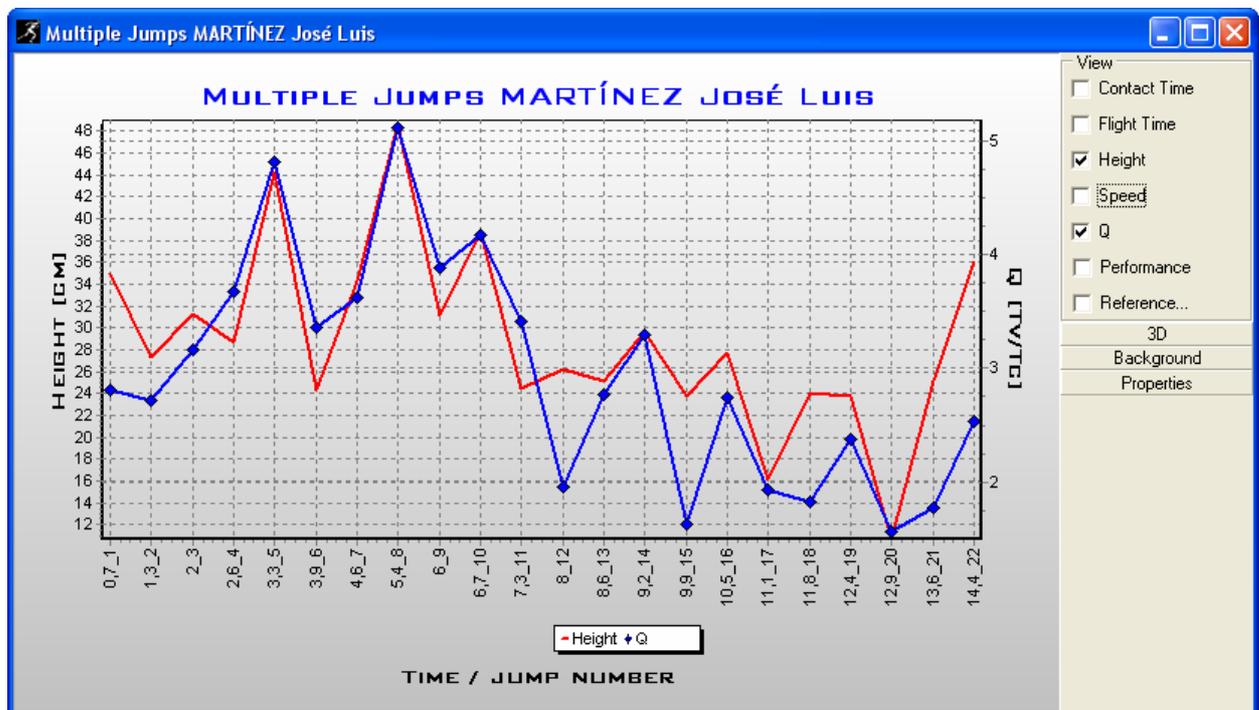


TO CREATE A GRAPH OF THIS KIND, SIMPLY BRING THE SHEET OF THIS TYPE OF TEST TO THE TOP OF THE CASCADE AND CLICK ON THE TEST DESIRED TO SELECT IT.

Performed Tests		Performed Trainings								
Date	Hour	Type	Jumps	Time	Contact	Flight	Height	Speed	Q	%Perf.
08/09/04	17:22:49	By Time	17	16,60	[178]	[438]	[23,69]	[2,15]	[2,52]	[107]
			1		224	426	22,3	2,09	1,902	100
			2		175	403	19,9	1,98	2,303	100
			3		133	388	18,4	1,9	2,917	108
			4		163	399	19,6	1,96	2,448	109
			5		180	386	18,2	1,89	2,412	92
			6		231	386	18,2	1,89	1,671	91
			7		179	425	22,1	2,08	2,374	88
			8		186	416	21,2	2,04	2,237	112
			9		138	462	26,2	2,27	3,348	115
			10		164	433	22,9	2,12	2,64	125
			11		154	449	24,7	2,2	2,916	128
			12		140	503	31,1	2,47	3,593	124
			13		203	477	27,9	2,34	2,35	126
			14		172	516	32,6	2,53	3	106

ALL THE JUMPS IN THAT TEST WILL BE SELECTED. AS WITH THE OTHER GRAPHS, EITHER CLICKING ON THE “GRAPH” BUTTON OR ON THE RIGHT BUTTON OF THE MOUSE WILL OPEN THE WINDOW OF THE GRAPH TITLE. ONCE IT HAS BEEN GIVEN A NAME, THE “OK” BUTTON LEADS US TO THE FINISHED GRAPH OF CONTINUOUS JUMPS.

A CONTINUOUS JUMPS GRAPH LOOKS LIKE THE FOLLOWING:



IN THE X-AXIS THE TIME ELAPSED AND THE JUMP NUMBER ARE REPRESENTED SEPARATED BY AN UNDERSCORE. IN THIS WAY, BOTH VARIABLES CAN BE SEEN AT THE



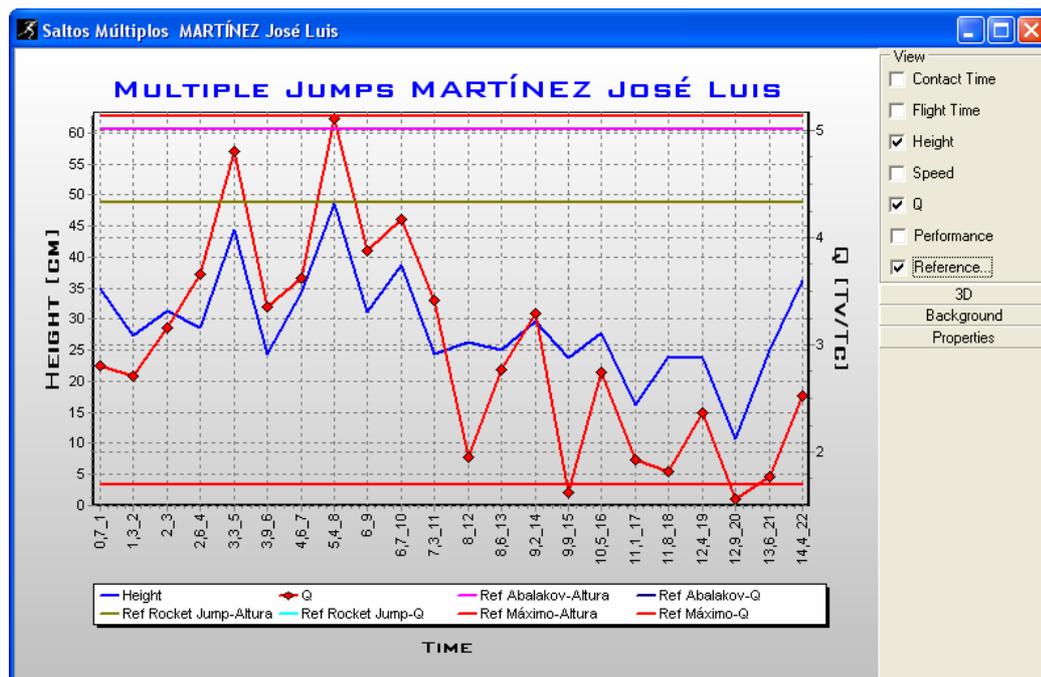
SAME TIME. APART FROM THE REGULAR VARIABLES, YOU WILL HAVE TWO MORE VARIABLES ON THE RIGHT: THE **PERFORMANCE %**, WHICH REFERS TO THE RELATION OF EACH OF THE JUMPS AS REGARDS THE MAXIMUM PERFORMED, AND THE **REFERENCES**, WHICH LET US ESTABLISH HORIZONTAL PARALLELS WITH DIFFERENT VALUES OBTAINED BY THE SAME ATHLETE IN VERTICAL JUMPS. WHEN THIS VARIABLE IS CHECKED, THE FOLLOWING DIALOG WINDOW APPEARS, WHICH ALLOWS SELECTING ONE OR MORE REFERENCE JUMPS:

The 'References' dialog window contains a table with the following data:

Date	Hour	Type	Contact	Flight	Height	Speed	Q	Drop H
01/03/02	13:34:01	Abalakov		703	60,6	3,45		
18/01/03	17:14:31	Abalakov		732	64,8	3,68		
11/06/03	18:44:01	Abalakov		767	67,2	3,79		
17/03/04	17:34:16	Abalakov		789	69,1	3,82		
30/09/04	13:55:06	Abalakov		792	69,4	3,89		

Below the table are buttons: 'Add to list', 'Remove from list', and 'Remove All'. At the bottom are 'Exit' and 'Add' buttons.

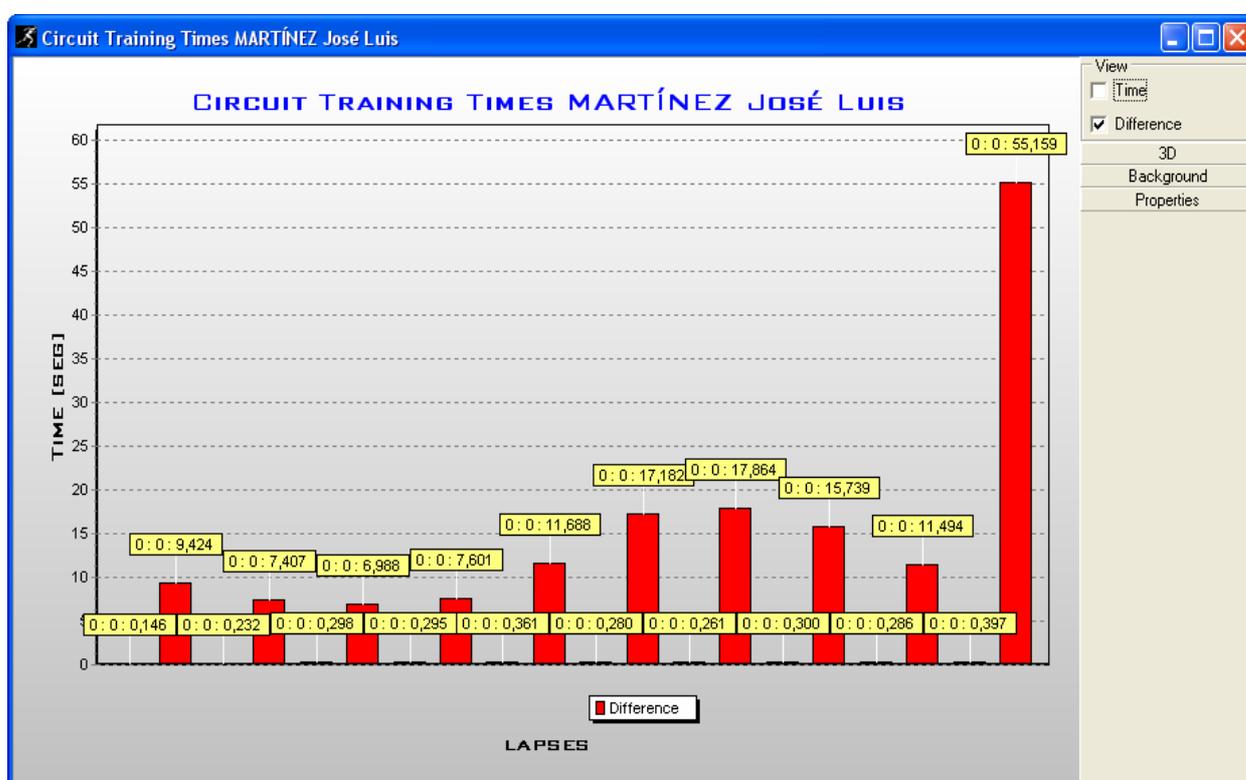
WHEN THE **ADD** BUTTON IS CLICKED ON, THE WINDOW CLOSES AND IT SHOWS THE SAME GRAPH BUT WITH A HORIZONTAL LINE FOR EACH JUMP SELECTED. THE **EXIT** BUTTON CANCELS THE SELECTION.



THESE GRAPHS ARE VERY USEFUL FOR FINDING THE MOMENT IN WHICH THE ATHLETE'S MECHANICAL OUTPUT STARTS DECREASING DUE TO FATIGUE WHEN FACING AN EFFORT OF MAXIMUM CHARACTERISTICS. A LITTLE PRACTICE IN THIS TYPE OF TEST IS NECESSARY SINCE THE ATHLETE HAS TO BE MOTIVATED FROM THE BEGINNING. IT IS COMMON TO SEE MAXIMUM TEST SESSIONS WHERE THE LAST JUMPS ARE BETTER THAN THE FIRST ONES: THE ONLY PHYSIOLOGIC EXPLANATION FOR THIS PHENOMENON IS THAT THE ATHLETE HAS SPECULATED OR THAT THE FIRST JUMPS HAVE NOT BEEN MAXIMUM.

4.4.4. ON TIMING WITH THE CHRONOMETER

THIS TYPE OF GRAPHS HAS THE ORDER IN WHICH THE CHRONOMETER HAS BEEN ACTIVATED IN THE X-AXIS, WHILE THE TIMES OBTAINED ARE IN THE Y-AXIS. TO CREATE A **CHRONOMETER GRAPH**, SIMPLY SELECT THE TEST DESIRED FROM THE CHRONOMETER SHEET AND CLICK ON THE CORRESPONDING BUTTON IN A SIMILAR WAY TO THE GRAPHS PREVIOUSLY EXPLAINED. THE SYSTEM WILL GENERATE A BAR GRAPH WITH THE TIME DIFFERENCES (PARTIAL).



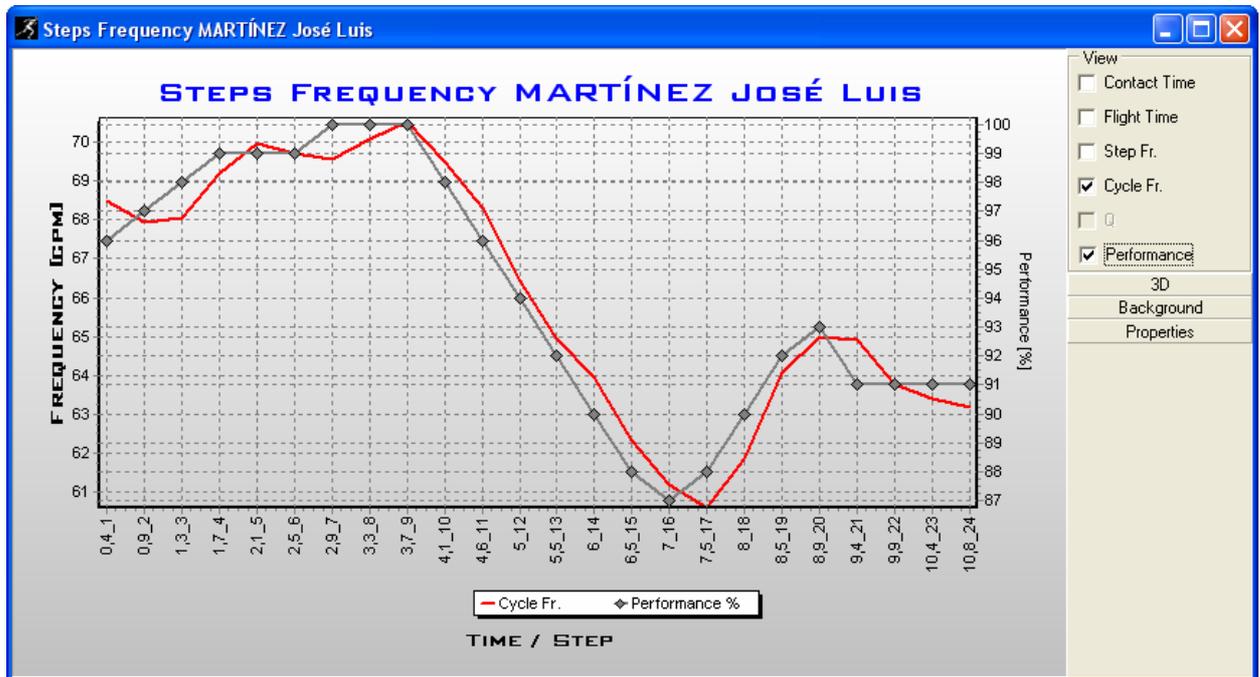
THIS TYPE OF GRAPH HAS ONLY TWO VARIABLES AVAILABLE: THE TOTAL **TIME**, OR TIME ACCUMULATED OR ELAPSED UNTIL EACH CUT, WHICH WILL INEVITABLY CREATE A RAMP GRAPH; AND THE LAPSES OR **DIFFERENCES**, WHICH WILL SHOW, FOR EXAMPLE, THE TIMES OF EACH LOOP AND THE CONTACT TIMES (GRAPH SHOWN), IF THE MAT HAS BEEN PLACED AT THE START LINE WITHIN A CLOSED CIRCUIT.

4.4.5. ON STEPS FREQUENCY

THIS TYPE OF GRAPHS SHOWS THE FREQUENCY EVOLUTION ACCORDING TO THE TIME ELAPSED. SINCE THIS TEST IS INFLUENCED BY FATIGUE, IT CAN ALSO BE USED TO ASSESS THE PERFORMANCE DECREASE AS A CONSEQUENCE OF THE PROGRESSIVE ACCUMULATION OF LACTATE.



TO CREATE A GRAPH OF THIS KIND, DO THE SAME AS WITH THE OTHER GRAPHS: SELECT THE TEST, CLICK ON THE “**GRAPH**” BUTTON, ENTER A NAME AND CLICK ON “**ACCEPT**”. NEXT, A WINDOW SHOWING A GRAPH SIMILAR TO THE FOLLOWING WILL APPEAR:



AMONG THE VARIABLES ON THE RIGHT, THE FOLLOWING CAN BE FOUND: STOP FREQUENCY, WHICH IS THE NUMBER OF STEPS PER MINUTE, UPDATED STEP BY STEP; THE CYCLE FREQUENCY (A CYCLE IS TWO CONSECUTIVE STEPS) UPDATED STEP BY STEP, INFORMED IN CYCLES PER MINUTE, AND THE PERFORMANCE, EXPRESSED AS A PERCENTAGE OF THE HIGHEST FREQUENCY VALUE OBTAINED IN THE TEST TIME.

WHEN TWO OR MORE VARIABLES ARE CHOSEN, THE LAST ONE, IN THIS CASE THE PERFORMANCE, WILL ALWAYS BE REPRESENTED IN THE AXIS ON THE RIGHT.

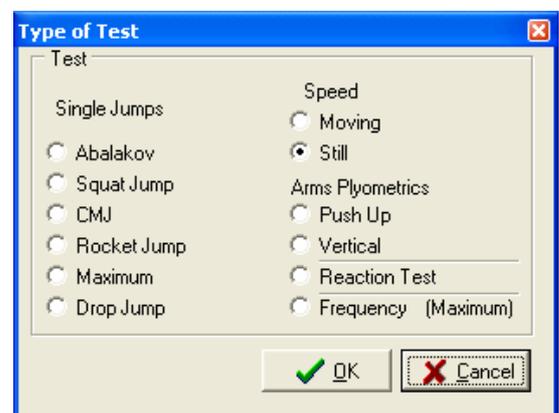
4.4.6. COMPARISON AMONG ATHLETES



IT ALLOWS COMPARING VARIABLES OF A TYPE OF TEST BETWEEN TWO OR MORE ATHLETES. IN ORDER TO BE ABLE TO USE IT, JUST CLICK ON THE CORRESPONDING BUTTON IN THE GENERAL TOOLBAR OR ACCESS TO IT VIA THE **TOOLS/COMPARATIVE GRAPH ...** OPTION OF THE MAIN MENU.

THE ATHLETES’ NAMES ARE AT THE BOTTOM, ON THE X-AXIS. THE COMPARISON IS ALWAYS ESTABLISHED BASED ON A **SAME TYPE OF SINGLE JUMP, SPEED, ARMS PLYOMETRICS, REACTION TEST OR MAXIMUN FREQUENCY.**

IN OTHER WORDS, A COMPARISON BETWEEN ATHLETES THAT PERFORMED DIFFERENT TESTS CANNOT BE CREATED. THESE GRAPHS ARE USED TO MAKE COMPARISONS AMONG THE MEMBERS OF THE SAME TEAM OR HOMOGENEOUS GROUP.



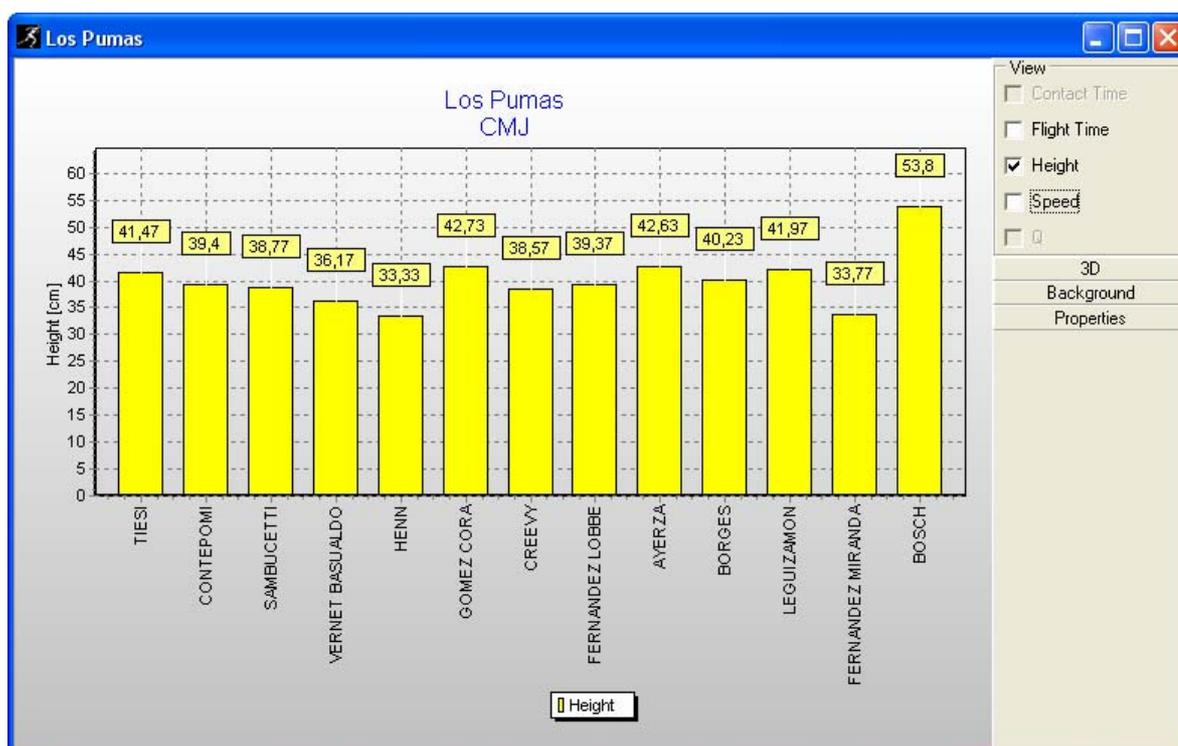
AFTER ENTERING THE GRAPH NAME, A DIALOG WINDOW WILL TELL US TO CHOOSE AMONG THE POSSIBLE TYPES OF TEST IN ORDER TO ESTABLISH A COMPARISON. THESE ONLY HAVE TO DO WITH SINGLE JUMPS, SPEED, UPPER LIMBS PLYOMETRICS, REACTION TEST (ONLY WITH THE AXON CPU), OR MAXIMUM FREQUENCY.

WHEN **ACCEPTING**, THIS WINDOW LEADS US TO THE CREATION OF AN EMPTY GRAPH, WHICH WILL BE MINIMIZED AT THE BOTTOM, ON THE LEFT, IN THE WORK ZONE. TO ENTER DATA IN THE GRAPH, YOU SIMPLY NEED TO GO TO THE WINDOWS WHERE THE DATA OF THE ATHLETES' TESTS CAN BE FOUND (THROUGH THE BUTTONS PREVIOUS AND NEXT WINDOW), EACH TEST YOU WANT TO USE IN THE GRAPH IS CHOSEN WITH THE LEFT BUTTON OF THE MOUSE, AND THEN, WITH THE RIGHT BUTTON, THE GRAPH TO WHICH YOU WISH TO SEND THOSE DATA IS SELECTED (IF THERE IS AN ONLY GRAPH OF THIS KIND, ONLY ONE OPTION WILL APPEAR).

Date	Hour	Type	Contact	Flight	Height	Speed	Q	Drop H
19/04/02	18:43:55	Abalakov		703	60,6	3,45		
01/09/02	15:34:01	Abalakov		708	62,4	3,61		
18/01/03	17:14:31	Abalakov		732	64,8	3,68		
11/06/03	18:44:01	Abalakov		767				
17/03/04	17:34:16	Abalakov		789				
11/08/04	18:59:49	CMJ		666				
11/08/04	18:55:11	CMJ		660	53,5	3,74		

IF WE WANT SEVERAL COMPARATIVE GRAPHS, THE PROGRAM WILL GIVE THE CORRESPONDING OPTION. OF COURSE, TESTS WHICH ARE NOT OF THE TYPE CHOSEN CANNOT BE SENT TO THE GRAPH SINCE THEIR VARIABLE COMPARISON WOULD LACK ANY SENSE. THIS IS ACHIEVED BY DISABLING THE CORRESPONDING OPTION. IT IS NOT POSSIBLE TO SEND MORE THAN ONE JUMP OF THE SAME ATHLETE IN THE SAME GRAPH, EITHER.

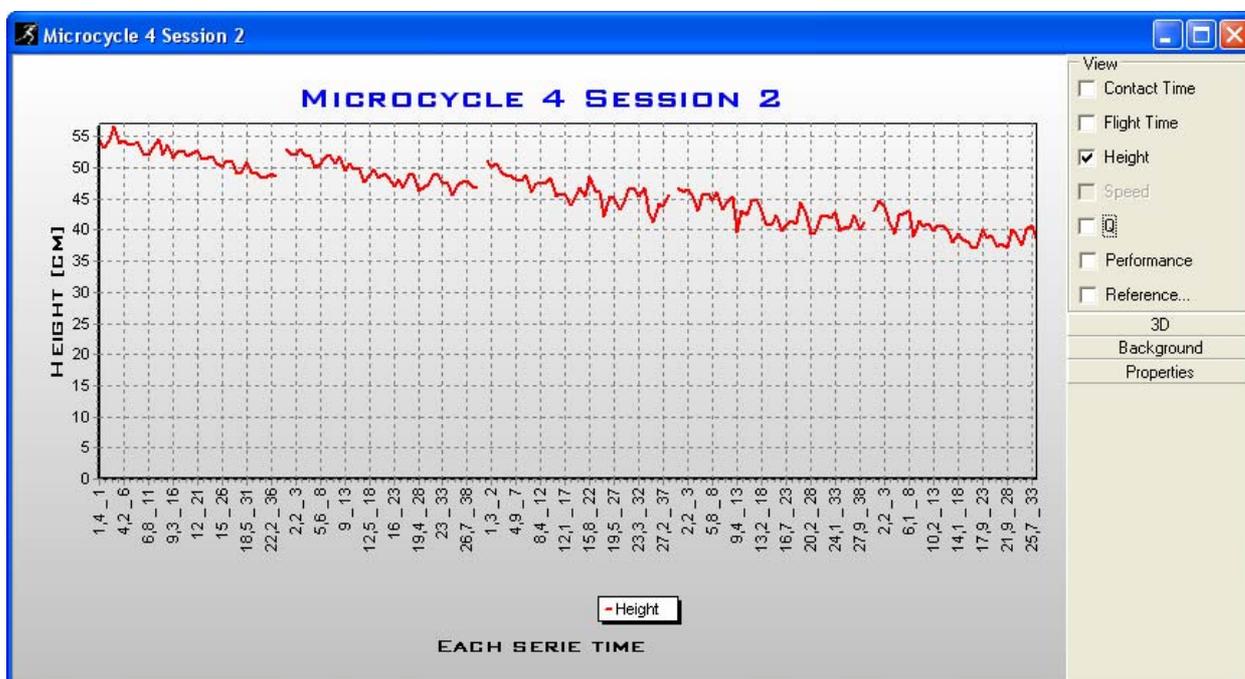
THE GRAPH REMAINS AS FOLLOWS:



IN THE X-AXIS, THERE ARE THE NAMES OF THE ATHLETES WHOSE TEST WAS CHOSEN TO ESTABLISH THE COMPARISON, WHEREAS IN THE Y-AXIS, A SCALE WILL BE PRESENTED DETERMINED BY THE TYPE OF VARIABLE THE USER WISHES TO GRAPH (ESTABLISHED TO THE RIGHT OF THE GRAPH). THE ORDER OF THE SPORTSPEOPLE WILL BE THE SAME ORDER IN WHICH THE DATA ARE INCORPORATED. IN THIS WAY, IT IS POSSIBLE TO ORDER THEM AS YOU WISH.

4.4.7. ON TRAINING SESSIONS

THE TRAINING SESSIONS CAN BE GRAPHED IN THE SAME WAY AS THE TEST SESSIONS, AS IF THEY WERE CONTINUOUS JUMPS. THE GRAPHS WILL ALWAYS HAVE, IN THE X-AXIS, THE TIME ELAPSED IN EACH SERIES INSTEAD OF THE ACCUMULATED TIME, AND IN EACH INTERRUPTION DUE TO A PAUSE, THE TIME ASSIGNED TO THAT PAUSE WILL APPEAR. THE WAY OF CREATING THEM IS THE SAME AS ANY TEST: THE TRAINING SESSION IS SELECTED USING THE MOUSE, CLICK ON THE "GRAPH" BUTTON, CHOOSE AN NAME AND A GRAPH WILL APPEAR THAT LOOKS AS THE FOLLOWING:



SIMILAR TO THE FREQUENCY TEST, THE **PERFORMANCE** IS BASED ON THE BEST JUMP OF THE WHOLE SESSION. THE **Q** VARIABLE IS TAKEN AS A BASIS FOR THIS CALCULATION. THE CURVE IS SMOOTHED WITH A THIRD ORDER MOVING AVERAGE DIGITAL FILTER IN ORDER TO IMPROVE ITS GRAPHIC APPEARANCE.

THE **REFERENCES** CONSIST IN HORIZONTAL LINES CORRESPONDING TO THE SINGLE JUMPS VALUES, SIMILARLY TO WHAT HAS BEEN EXPLAINED IN THE CONTINUOUS JUMPS GRAPHS.

4.4.8. GENERAL FEATURES FOR ALL THE GRAPHS

AS IT HAS BEEN SEEN SO FAR, IT IS NOT NECESSARY TO HAVE PREVIOUS KNOWLEDGE OF COMPUTING STUDIES TO CREATE A COMPLEX GRAPH WITH THE DATA OF THE TEST OR TRAINING SESSIONS. IT IS NEITHER NECESSARY TO MOVE THE DATA TO ANOTHER PROGRAM, SUCH AS CALCULATION SHEET, IN ORDER TO BE ABLE TO GRAPH THEM. NEXT

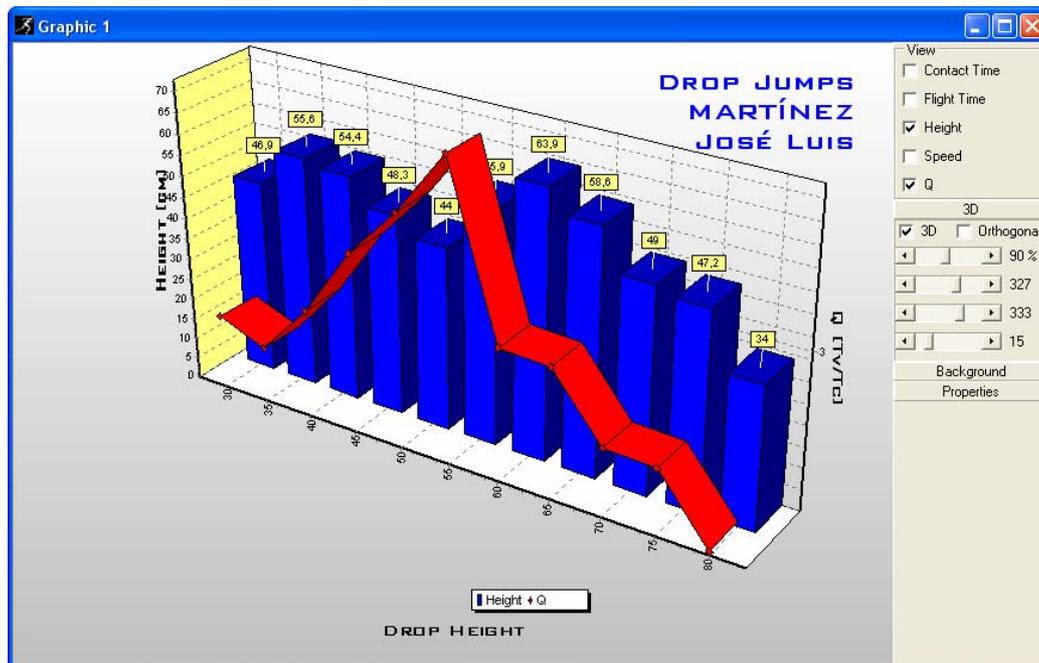
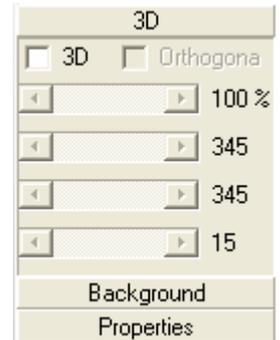


THERE ARE MORE OPTIONS TO PERSONALIZE AND IMPROVE THE APPEARANCE OF THE GRAPHS ALREADY CREATED.

IN EVERY GRAPH WINDOW, IN THE UPPER RIGHT CORNER, THERE ARE THE VARIABLES OPTIONS TO CHECK, DEPENDING ON THE KIND OF TEST. BELOW, THERE ARE THREE BUTTONS WHICH ALLOW CONTROLLING THE GRAPH APPEARANCE, NAMELY: **3D**, **BACKGROUND** AND **PROPERTIES**.

3D

IT SETS FOUR VARIABLES WHICH MODIFY THE PERSPECTIVE APPEARANCE. THE **3D** CHECK BOX TURNS THE CURRENT FLAT GRAPH INTO A 3D-GRAPH WITH VANISHING POINT. THE GRAPH LOOKS AS FOLLOWS:



THE **ORTHOGONAL** BOX SETS THE 45° PERSPECTIVE (45° VANISHING AND REDUCED DEPTH).

THE **FIRST** SLIDING CONTROL SETS THE GRAPH SIZE, EXPRESSED AS A PERCENTAGE.

THE **SECOND** SLIDING CONTROL ALLOWS ROTATING THE GRAPH AROUND A VERTICAL AXIS, WHICH IS PARALLEL TO THE Y-AXIS.

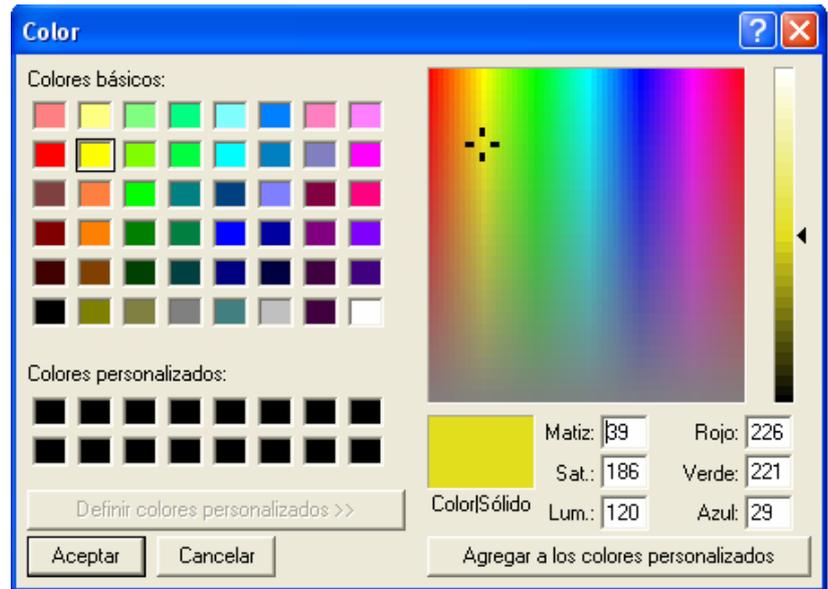
THE **THIRD** SLIDING CONTROL ALLOWS ROTATING THE GRAPH AROUND A HORIZONTAL AXIS, WHICH IS PARALLEL TO THE X-AXIS.

FINALLY, THE **FOURTH** SLIDING CONTROL DEFORMS THE GRAPH, ADDING VANISHING POINTS TO THE PERSPECTIVE IN AN AXIS WHICH IS PARALLEL TO THE Y-AXIS.

BACKGROUND

IT SETS THE TWO COLORS THAT WILL BLEND FORMING THE GRADIENT OF THE GRAPH BACKGROUND (THE UPPER AND THE LOWER). WHEN CLICKING ON ONE OF THE TWO COLOR CHARTS, THE FOLLOWING WINDOW OF COLOR SELECTION WILL APPEAR:





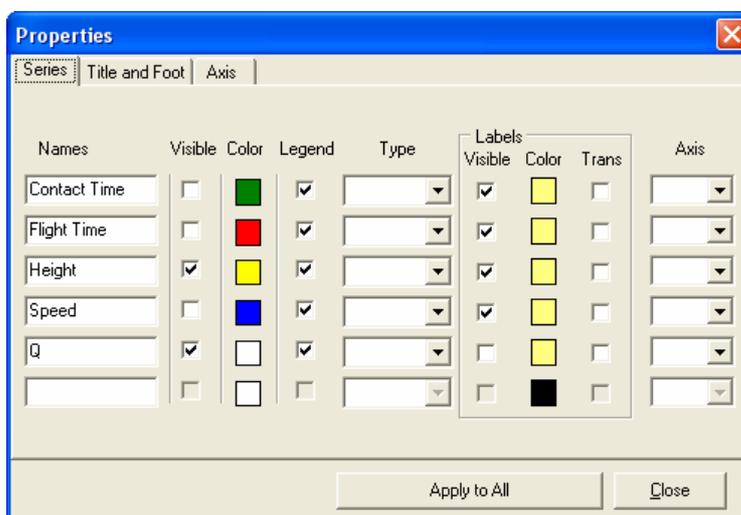
IT IS POSSIBLE TO DEFINE PERSONALIZED COLORS CLICKING ON THE CORRESPONDING BUTTON. THIS WILL ENLARGE THE WINDOW WITH TWO MORE CONTROLS: ONE FOR SETTING THE COLOR AND THE OTHER FOR SETTING THE SHADE. TO DEFINE A PERSONALIZED COLOR, SIMPLY SELECT ONE OF THE BLACK SQUARES OF THE CHART ON THE LEFT SO THAT THEN YOU CAN CHOOSE THE COLOR AND THE SHADE USING THE CONTROLS ON THE RIGHT.

IT CAN BE GENERATED IN THE SAME WAY BUT ENTERING IN NUMERIC FORMAT EACH OF THE VARIABLES DEFINING A COLOR: SHADE, SATURATION, LUMINOSITY, APART FROM THE RED, GREEN AND BLUE COMPONENTS. ONCE ALL THE COLOR FEATURES HAVE BEEN DEFINED, CLICK ON **ADD TO PERSONALIZED COLORS** AND THE SELECTED SQUARE WILL BE FILLED WITH THE COLOR DEFINED BY THE USER.

PROPERTIES

THE GRAPH PROPERTIES ARE DIVIDED INTO THREE SHEETS: THE FIRST ONE CONTAINING OPTIONS FOR THE SERIES, ANOTHER FOR THE GRAPH HEADER AND FOOTER OPTIONS AND THE LAST ONE FOR THE COORDINATE AXES.

THE **SERIES** OPTIONS ALLOW CHANGING THE FOLLOWING IN AN INDEPENDENT WAY FOR EACH GRAPHED VARIABLE:



- THE **NAME** OF EACH VARIABLE FOR THE REFERENCE.

- MAKE IT **VISIBLE** OR INVISIBLE.

- CHANGE THE **COLOR**, A SIMPLE CLICK LEADS US TO THE SAME COLOR SELECTION WINDOWS ALREADY SEEN.

- TAKE IT OUT OR PUT IT IN A REFERENCE **LEGEND**.

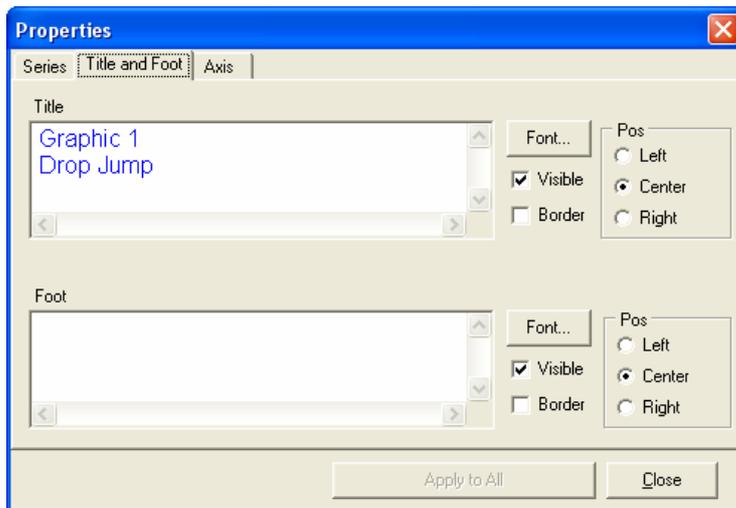
- CHANGE THE **TYPE** OF GRAPH CHOOSING BETWEEN A BAR GRAPH (IDEAL FOR COMPARISONS) OR A LINE GRAPH



(IDEAL FOR EVOLUTION GRAPHS).

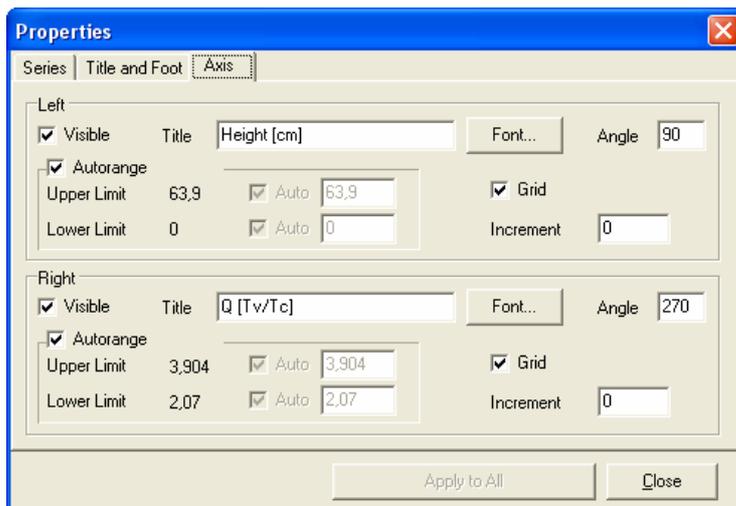
- SEE THE **LABELS** ON EACH POINT IN THE GRAPH, WITH THE NUMERIC VALUES.
- CHOOSE THE **LABEL COLOR**.
- MAKE THEM **TRANSPARENT** OR **OPAQUE**.
- CHANGE THE **Y-AXIS** ACTIVE FOR THAT VARIABLE, TO MAKE DOUBLE-AXIS GRAPHS. THIS OPTION IS USED WHEN THE VARIABLES YOU WANT TO GRAPH HAVE VERY DIFFERENT MAGNITUDE RATES.

THE OPTIONS **HEADER AND FOOTER** ALLOW CHANGING THE FOLLOWING INDEPENDENTLY TO THE TITLE AND FOOTER OF THE GRAPH:



- THE TITLE TEXT **FONT**, WHICH WILL TAKE US TO THE STANDARD DIALOG TO SELECT FONTS.
- MAKE IT **INVISIBLE**.
- ADD IT A **BORDER**, LIKE A BOX, AROUND THE TEXT.
- JUSTIFY IT, ALIGN **RIGHT, LEFT OR CENTER**, ACCORDING TO THE GRAPH YOU HAVE.

THE **AXIS** OPTIONS ALLOW CHANGING THE FOLLOWING, INDEPENDENTLY, TO THE LEFT AND RIGHT (Y-AXIS) AXIS:



- MAKE THEM **VISIBLE** OR NOT.
- CHANGE THE **TITLE** AND THE UNIT.
- CHANGE THE **TITLE FONT**.
- CHANGE THE **ANGLE** IN WHICH THE AXIS TEXT IS SITUATED.
- CUSTOMIZE **AUTOMATIC RANGES OR LIMITS**.
- MAKE THE REFERENCE **GRID** VISIBLE OR NOT.
- SET THE **GRID INCREASE**.

FINALLY, THE **APPLY TO ALL** BUTTON ALLOWS SETTING ALL THESE PROPERTIES TO ALL THE GRAPHS OPENED SO FAR, WHEREAS THE **CLOSE** BUTTON CLOSSES THE WINDOW APPLYING THE CHANGES ONLY TO THE ACTIVE GRAPH WINDOW.



THE **FONT** BUTTONS, SEEN IN THE PREVIOUS TWO WINDOWS, LEAD TO THE FOLLOWING STANDARD WINDOW OF THE ALREADY INSTALLED FONT SELECTION:

FROM THIS WINDOW, IT IS POSSIBLE TO CHANGE ALL THE PROPERTIES OF THE **FONT** SELECTED, ITS TYPE, ITS STYLE, ITS **SIZE**, ITS **EFFECTS**, ITS **COLOR**, OR EVEN THE TYPE OF **ALPHABET**.

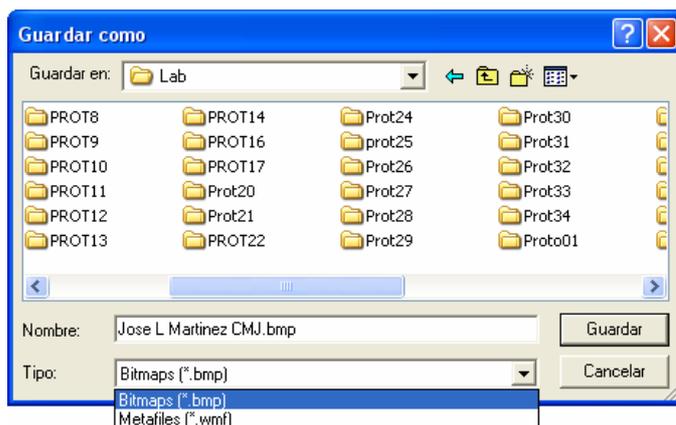
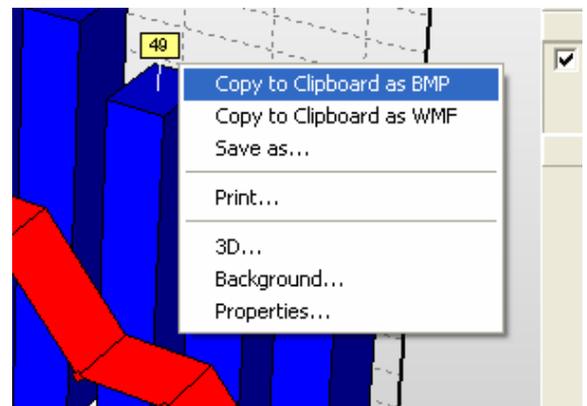
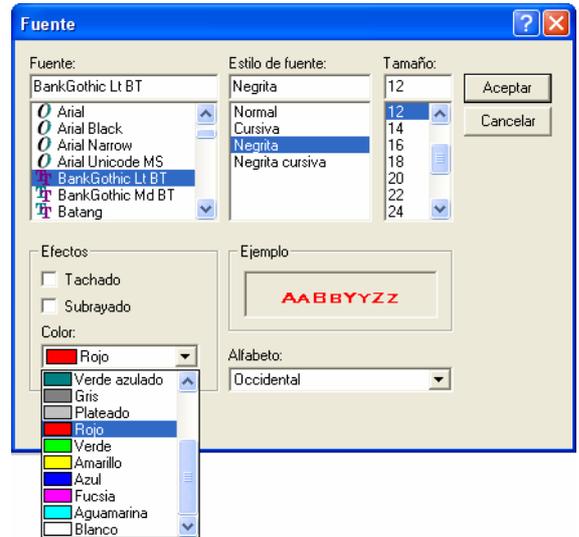
IN A SMALL AREA, THE **EXAMPLE** OF THE FONT APPEARANCE IS SHOWN ACCORDING TO THE CHANGES MADE.

FINALLY, TO **SAVE A GRAPH** IN A GRAPH FORMAT FILE, SIMPLY CLICK ON THE GRAPH USING THE RIGHT BUTTON SO THAT THE FOLLOWING CONTEXTUAL MENU WILL APPEAR:

FROM HERE, IT IS POSSIBLE TO MOVE IT TO THE WINDOWS CLIPBOARD (VOLATILE MEMORY) SO THAT YOU CAN MOVE IT FROM THERE TO ANOTHER PROGRAM USING THE OPTION EDIT/PASTE (CTRL+V). IT CAN BE MOVES AS BITMAP (.BMP) OR METAFILE FORMAT (.WMF).

THE SAME CAN BE DONE FROM THE MAIN MENU, OPTION FILE/SAVE OR SAVE AS THE OPTION SAVE AS ... ALLOWS CREATING A FILE WITH THE ABOVE MENTIONED FORMATS VIA THE FOLLOWING DIALOG:

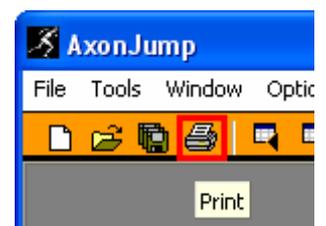
YOU SHOULD ENTER A VALID NAME FOR THE FILE, CHOOSE A LOCATION, AND ALSO CHOOSE THE GRAPHIC FORMAT.



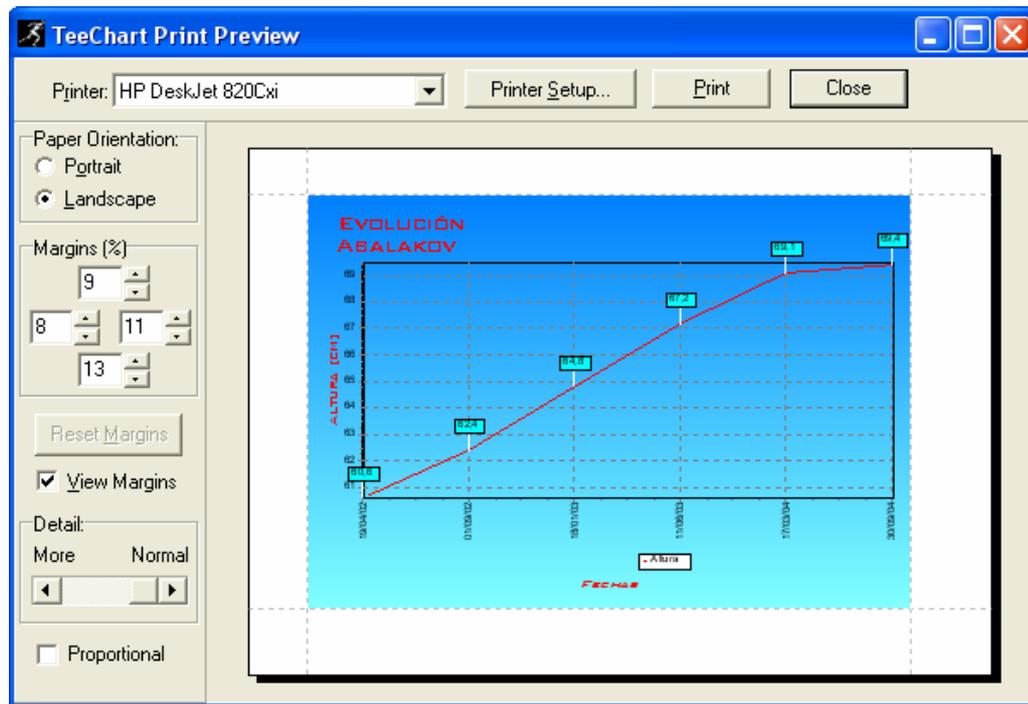
IT IS WORTH MENTIONING THAT THE GRAPHIC FILES SAVED CANNOT BE OPENED AGAIN USING THIS PROGRAM, BUT THEY ARE DEVOTED TO BEING EDITED OR USED IN OTHER PROGRAMS SPECIALIZED FOR THEM.

4.4.9. PRINTING

A GRAPH CAN BE PRINTED IN TWO WAYS: INSERTED IN A REPORT, AS IT IS EXPLAINED IN [SECTION 4.6.](#), OR INDEPENDENTLY IN A SEPARATE SHEET. THERE ARE SEVERAL WAYS OF PRINTING IT IN A SEPARATE WAY HAVING THE GRAPH WINDOW ACTIVE: YOU CAN CLICK ON THE PRINTER BUTTON; FROM THE MAIN MENU WITH THE



OPTION FILE/PRINT, OR CLICKING ON THE GRAPH USING THE RIGHT BUTTON, PRINT ... OPTION. ALL THESE OPTIONS LEAD TO THE FOLLOWING WINDOW OF GRAPH PRINTING:



THE CONTROL BAR IN THIS WINDOW IS THE FOLLOWING (FROM LEFT TO RIGHT AND TOP-DOWN):

- **PRINTER** IT ALLOWS SELECTING THE PRINTER AMONG THOSE ALREADY INSTALLED.
- **PRINTER SETUP** IT LEADS US TO THE SELECTED PRINTER DRIVER.
- **PRINT** IT PRINTS USING THE SELECTED PARAMETERS.
- **CLOSE** IT CLOSSES THE WINDOW.
- **PAGE ORIENTATION** IT ALLOWS ORIENTATING THE PAGE VERTICALLY (**PORTRAIT**) OR HORIZONTALLY (**LANDSCAPE**).
- **MARGINS %** IT ALLOWS SETTING THE FOUR MARGINS OF THE PAGE AS A PERCENTAGE OF THE WHOLE DIMENSION OF THE PAGE.
- **RESET MARGINS** IT RESETS THE INITIAL MARGINS IN CASE THEY HAVE BEEN MODIFIED.
- **VIEW MARGINS** IT REMOVES THE DOTTED LINE SYMBOLIZING THE MARGIN LIMIT IN ITS VIEWING.
- **DETAIL** IT ALLOWS ENLARGING THE AREA CORRESPONDING TO THE GRAPH AS REGARDS ITS TEXTS SO AS TO BE ABLE TO VIEW SMALLER DETAILS USING A SLIDING CONTROL.
- **PROPORTIONAL** IT RESETS THE DRAWING ORIGINAL PROPORTIONS REGARDING THE PAGE SIZE.

ANOTHER WAY OF PRINTING A GRAPH IS EXPORTING IT TO OTHER PROGRAMS (COPYING IT IN THE CLIPBOARD) AND DOING IT FROM THERE.

4.5. GROUP AVERAGES

THIS TOOL IS USED TO AUTOMATICALLY CALCULATE THE ARITHMETIC AVERAGE AND THE STANDARD DEVIATION OF A CHOSEN GROUP OF SPORTSPEOPLE. THESE STATISTICAL INDICATORS ARE USEFUL TO DESCRIBE A GROUP OF SPORTSPEOPLE. AS A RESULT, AN

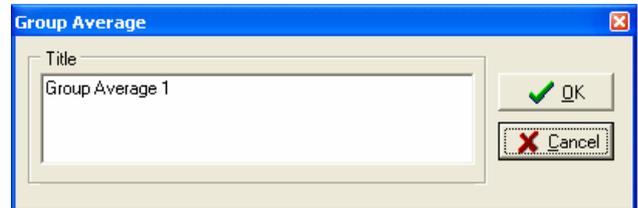


AVERAGE FILE IS CREATED WITH THE **.PMG** EXTENSION, WHICH CAN BE OPENED LATER IN ORDER TO ADD OR REMOVE SPORTSPEOPLE FROM YOUR LIST.

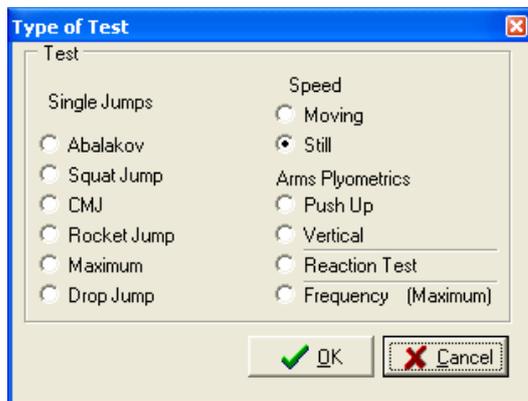
IN ORDER TO BE ABLE TO USE IT, JUST CLICK ON THE CORRESPONDING BUTTON IN THE GENERAL TOOLBAR OR ACCESS TO IT VIA THE **TOOLS/GROUP AVERAGE ...** OPTION OF THE MAIN MENU.



ONCE YOU HAVE CLICKED ON IT, YOU ACCESS TO A WINDOW SO AS TO GIVE A NAME TO THE AVERAGE THAT IS GOING TO BE CALCULATED. THIS NAME HAS TO DISTINGUISH THIS AVERAGE AMONG OTHERS, SO IT IS CONVENIENT TO CONTAIN A MINIMAL DESCRIPTION OF ITS CONTENT, FOR EXAMPLE: *CMJ FORWARD*.



WHEN ACCEPTING, THE FOLLOWING WINDOW APPEARS TO SELECT THE VARIABLE YOU WISH TO AVERAGE:



FROM THIS WINDOW, THE TYPE OF TEST WHOSE DATA WILL BE PART OF THE AVERAGE IS SELECTED. THE TESTS THAT CAN BE AVERAGED ARE THOSE GRANTING AN ONLY VALUE AS A RESULT. WHEN ACCEPTING, AN AVERAGE FILE IS CREATED, WHICH WILL BE MINIMIZED AT THE BOTTOM, TO THE LEFT OF THE WORK ZONE.

NEXT, EACH TEST THAT WANTS TO BE AVERAGED HAS TO BE SELECTED USING THE RIGHT BUTTON OF THE MOUSE:

act	Flight	Height	Speed	Q	Drop H
637		49,9	3,13		
620		47,1	3,04		
619		47	3,04		
504		31,1	2,47		
507		31,5	2,49		

THIS SELECTION WILL HAVE TO BE REPEATED FOR EACH TEST THAT WANTS TO BE INCLUDED IN THE CALCULATION. **THE PROGRAM DOES NOT ALLOW ENTERING TWO TESTS OF THE SAME ATHLETE OR A TYPE OF TEST THAT IS NOT THE ONE DEFINED WHEN THE FILE IS CREATED.** EACH TIME A TEST IS ADDED, BOTH THE AVERAGE AND THE STANDARD DEVIATION ARE RECALCULATED. IN THIS WAY, YOU AVOID CALCULATING WITH VALUES THAT ARE DOUBLED OR NOT

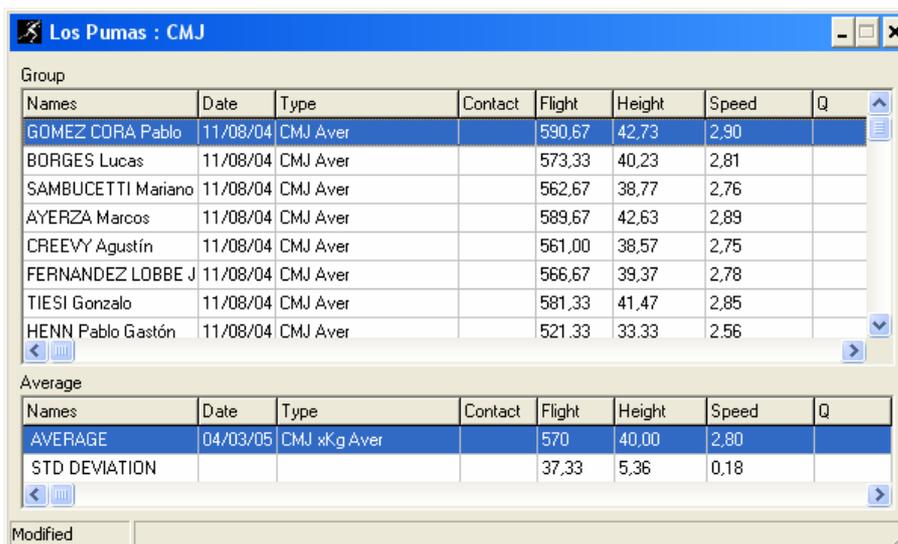
HOMOGENEOUS. IF THERE IS MORE THAN ONE AVERAGE STATED FOR THE SAME TYPE OF TEST, THE PROGRAM WILL SHOW THE LIST SO THAT THE USER CAN CHOOSE TO WHICH AVERAGE S/HE WANTS TO ADD THE DATA.

THE AVERAGE FILE IS INCREASED IN THIS WAY WITH THE DATA OF THE SPORTSPEOPLE CHOSEN BY THE USER, AND THEY ARE INCORPORATED TO THE LIST IN THE SAME ORDER.

THE AVERAGE WINDOW SHOWS AT THE BEGINNING THE LIST OF THE ATHLETES INCORPORATED AND THEN, THE VARIABLES OBTAINED IN THE SELECTED TESTS.



AT THE END, THERE IS THE LINE SHOWING THE AVERAGE AND THE STANDARD DEVIATION.

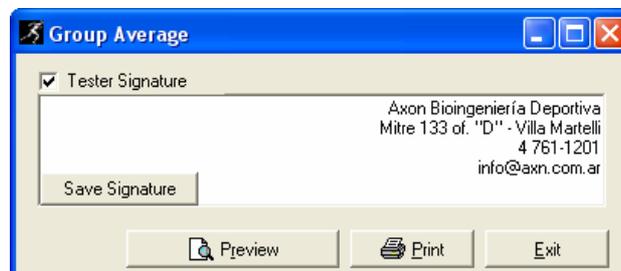


Group							
Names	Date	Type	Contact	Flight	Height	Speed	Q
GOMEZ CORA Pablo	11/08/04	CMJ Aver		590.67	42.73	2.90	
BORGES Lucas	11/08/04	CMJ Aver		573.33	40.23	2.81	
SAMBUCETTI Mariano	11/08/04	CMJ Aver		562.67	38.77	2.76	
AYERZA Marcos	11/08/04	CMJ Aver		589.67	42.63	2.89	
CREEVY Agustín	11/08/04	CMJ Aver		561.00	38.57	2.75	
FERNANDEZ LOBBE J	11/08/04	CMJ Aver		566.67	39.37	2.78	
TIESI Gonzalo	11/08/04	CMJ Aver		581.33	41.47	2.85	
HENN Pablo Gastón	11/08/04	CMJ Aver		521.33	33.33	2.56	
Average							
Names	Date	Type	Contact	Flight	Height	Speed	Q
AVERAGE	04/03/05	CMJ xKg Aver		570	40.00	2.80	
STD DEVIATION				37.33	5.36	0.18	

Names	Date	Type
FERNANDEZ LOBBE J	11/08/04	CMJ Aver
LEGUIZAMON Juan Ma	11/08/04	CMJ Aver
BORGES Lucas	11/08/04	CMJ Aver
AYERZA Marcos	11/08/04	CMJ Aver
CREEVY Agustín	11/08/04	CMJ Aver

TO REMOVE AN ATHLETE FROM THE LIST, SIMPLY CLICK ON THE TEST USING THE RIGHT BUTTON OF THE MOUSE AND CHOOSE THE REMOVE OPTION. A CONFIRMATION SIMILAR TO THE ONE SHOWN WHEN REMOVING A TEST WILL BE ASKED FOR.

TO PRINT AN AVERAGE, THE OPTION FILE/PRINT HAS TO BE CHOSEN FROM THE MAIN MENU; CLICK ON THE BUTTON CORRESPONDING TO THE PRINTER OF THE SAME MENU OR CHOOSE PRINT... FROM THE ACTIVE CONTEXTUAL MENU USING THE RIGHT BUTTON OF THE MOUSE ON THE WINDOW (SEE THE PREVIOUS FIGURE). NEXT, THE FOLLOWING WINDOW WILL BE ACTIVATED:



Group Average

Tester Signature

Axon Bioingeniería Deportiva
Mitre 133 of. "D" - Villa Martelli
4 761-1201
info@axn.com.ar

Save Signature

Preview Print Exit

FROM IT, THE SIGNATURE OF THE TESTER CAN BE INCLUDED, IT CAN BE MODIFIED AND SAVED IN THE HARD DISK FOR THE PRINTING OF FUTURE REPORTS.

THE PREVIEW BUTTON LETS US SEE THE REPORT AS IT WOULD BE PRINTED (MORE INFORMATION ABOUT THIS IN SECTION 4.6), THE PRINT BUTTON SENDS A REPORT TO THE PRINTER, WHEREAS THE EXIT BUTTON CANCELS THE OPERATION.

TO SAVE AN AVERAGE, THE OPTION FILE/SAVE HAS TO BE CHOSEN FROM THE MAIN MENU, OR CLICK ON "SAVE ALL" IN THE GENERAL TOOL BAR OR TRY CLOSING IT AND ANSWERING YOU WANT TO SAVE THE CHANGES. NEXT, A STANDARD WINDOW WILL ASK FOR THE NAME OF THE FILE AND WHERE YOU WANT TO SAVE IT. THE AVERAGE FILE IS SAVED WITH THE .PMG EXTENSION.

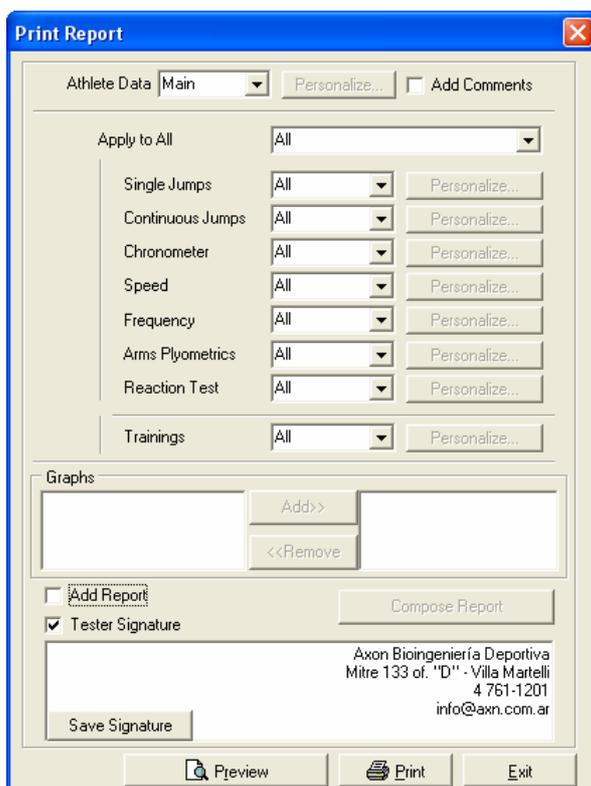
TO OPEN AN AVERAGE, THE OPTION FILE/OPEN FROM THE MAIN MENU HAS TO BE CHOSEN OR JUST CLICK ON THE CORRESPONDING BUTTON IN THE GENERAL TOOLBAR. ONCE IT IS OPEN, SPORTSPEOPLE CAN BE ADDED OR REMOVED FROM YOUR LIST IN THE SAME WAY.



4.6. REPORTS CREATION

THE PROGRAM ALLOWS CREATING DETAILED REPORTS OF AN ATHLETE'S PERFORMANCE. THE TEST AND TRAINING SESSIONS CAN BE INCLUDED IN IT, ACCORDING TO THE USER'S WISHES, AS WELL AS GRAPHS AND COMMENTS.

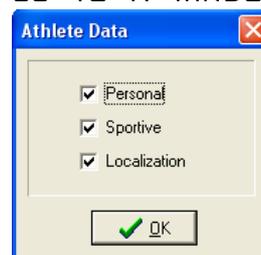
TO CREATE A REPORT, JUST CLICK ON THE PRINTER BUTTON IN THE ATHLETE'S TOOLBAR, OR CHOOSE THE FILE/PRINT... OPTION IN THE MAIN MENU. THIS WILL LEAD US TO THE FOLLOWING DIALOG WINDOW:



THIS WINDOW COMMANDS A POWERFUL TOOL OF REPORTS PERSONALIZED CREATION.

THE OPTIONS IT PRESENTS ARE THE FOLLOWING:

ATHLETE'S DATA: IT ALLOWS CHOOSING AMONG ALL THE DATA THE MAIN DATA (FIRST AND LAST NAMES, SPORT, DATE OF BIRTH, MAJOR, INSTITUTION AND COACH), NONE, OR A PERSONALIZED COMBINATION OF THEM USING THE "PERSONALIZE..." OPTION, WHICH LEADS US TO A WINDOW WHERE THE FOLLOWING NON-EXCLUDING THREE OPTIONS APPEAR: PERSONAL DATA, SPORTIVE DATA AND CONTACT DATA, ACCORDING TO YOUR WISHES.



INCLUDE COMMENT: IT ENABLES THE PRINTING OF THE SHEET CONTAINING THE ATHLETE'S COMMENTS.

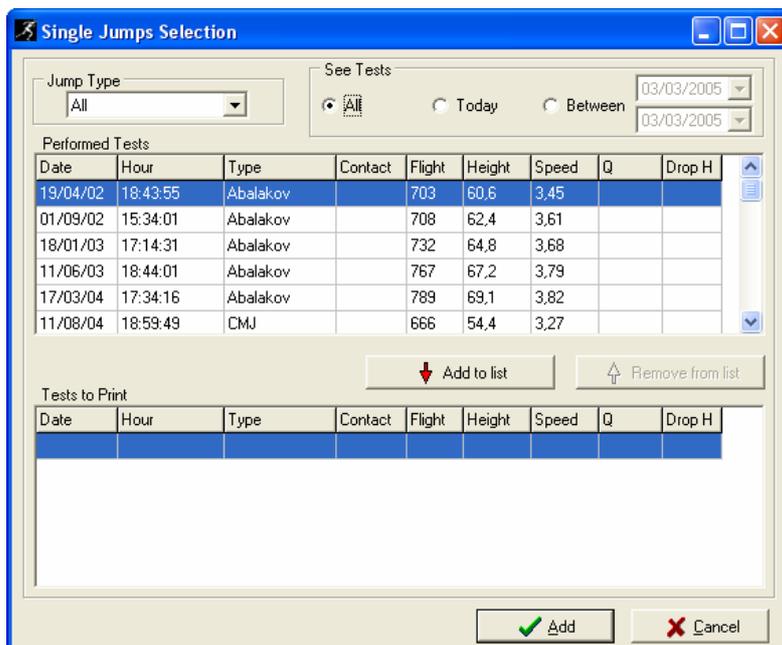
APPLY TO ALL: IT ALLOWS CHOOSING IN A GLOBAL WAY WHICH TESTS TO PRINT IN THE REPORT. THE OPTIONS ARE **ALL**, WHICH LETS US PRINT ALL THE TEST AND TRAINING SESSIONS APPEARING IN THE FILE; **TODAY**, WHICH SELECTS ONLY THOSE CARRIED OUT ON THE PRESENT DATE; **NONE**, WITH WHICH NO TEST IS PRINTED, AND WHICH IS USEFUL FOR EXAMPLE WHEN WE ONLY WANT TO PRINT GRAPHS, AND **PERSONALIZED**, WHICH MAKES IT POSSIBLE TO CHOOSE AMONG THE TEST AND/OR TRAINING SESSIONS PERFORMED WHICH ONES WE WANT TO INCLUDE IN THE REPORT.

THE OPTIONS **SINGLE JUMPS**, **CONTINUOUS JUMPS**, **CHRONOMETER**, **SPEED STARTING IN A RUNNING CONDITION**, **FREQUENCY**, **ARMS PLYOMETRICS**, **REACTION TEST** AND **TRAINING SESSIONS** HAVE A LIST CONTAINING THE SAME OPTIONS ON THE RIGHT: **ALL**, **TODAY**, **NONE** AND **PERSONALIZED**, WHICH MAKES IT POSSIBLE TO PERSONALIZE EVEN MORE THE SELECTION OF THE TESTS TO BE PRINTED. THE BUTTON ON THE RIGHT OF EACH OPTION, **PERSONALIZE...**, IS ACTIVATED ONLY WHEN WE CHOOSE THE LAST OPTION FROM THE LIST, WHICH MAKES IT POSSIBLE TO SELECT ONE BY ONE THE TESTS YOU WISH TO INCLUDE IN THE REPORT.

THIS BUTTON OPENS THE DIALOG WINDOW FROM WHERE IT IS POSSIBLE TO SELECT ONLY ONE TYPE OF TEST (SIMILAR TO THE WINDOW TO CREATE AN AVERAGE), THE DATE OF



THE TEST(S) OR EVEN THE DATE RANGE AMONG WHICH THE TESTS DESIRED CAN BE FOUND. THIS SELECTION WINDOW LOOKS AS FOLLOWS:



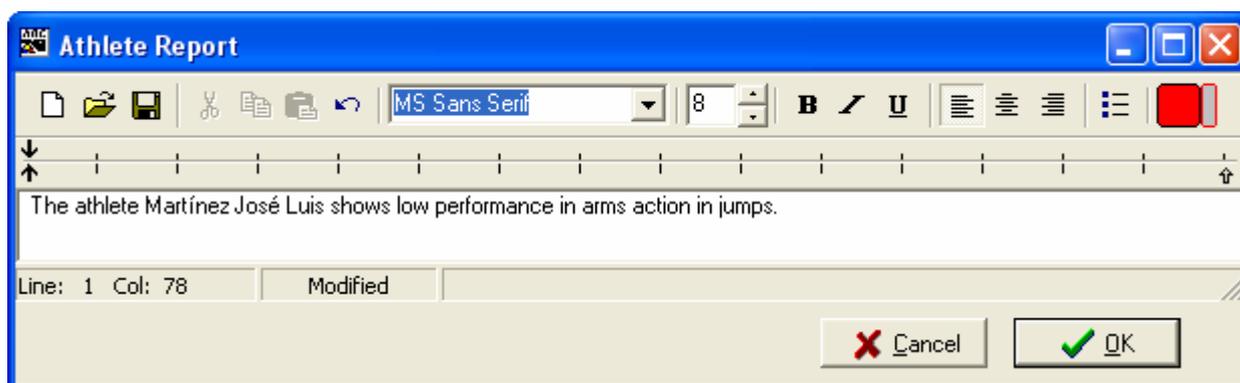
AS IN THE AVERAGE WINDOW, THE TYPE OF TEST TO SELECT AND THE DATE RANGE ARE IN THE UPPER PART. THERE ARE TWO AREAS BELOW: THE FIRST SHOWS THE TESTS PERFORMED WHICH FULFILL THE CONDITIONS SET ABOVE, AND THE SECOND SHOWS THE TESTS WHICH HAVE BEEN CHOSEN FROM THE FIRST LIST.

THE SELECTION CAN BE MADE USING THE **ADD** BUTTON AFTER SELECTING THE TEST DESIRED BY SIMPLY CLICKING ON IT OR BY CLICKING TWICE ON THE DATA. TO REMOVE AN TEST FROM THE LIST, DO THE SAME BUT OPERATING WITH THE LIST OF **TESTS TO PRINT** WITH THE **REMOVE FROM THE**

LIST BUTTON OR CLICKING TWICE ON THE TEST TO REMOVE.

GRAPHS: THIS OPTION PRESENTS TWO AREAS: THE ONE ON THE LEFT SHOWS THE NAMES OF THE GRAPHS WHICH HAVE BEEN FOUND IN WINDOWS OPENED SO FAR, AND THE ONE ON THE RIGHT SHOWS THE GRAPHS YOU WANT TO INCLUDE IN THE REPORT. YOU CAN ADD OR REMOVE GRAPHS FROM PRINTING USING THE CORRESPONDING BUTTONS OR CLICKING TWICE.

INCLUDE REPORT: IT ALLOWS WRITING A COMMENT WHICH WILL BE PLACED AT THE END OF THE REPORT SO THAT THE PERSON ASSESSING CAN INCLUDE HIS/HER COMMENTS, SUGGESTIONS OR ANYTHING IN PARTICULAR ABOUT WHAT S/HE BELIEVES CONVENIENT. TO THE RIGHT OF THIS ITEM YOU WILL SEE THE **WRITE A REPORT** BUTTON, WHICH WILL OPEN THE FOLLOWING WINDOW TO PROCESS THE TEXT YOU WANT TO WRITE:



ONCE YOU HAVE WRITTEN WHAT YOU WANT, CLICK ON THE **OK** BUTTON SO AS TO INCLUDE IT OR ON **CANCEL** SO AS NOT TO INCLUDE THE COMMENT. THE COMMENT EDITED IN THIS WINDOW WILL BE INSERTED AT THE END OF THE REPORT AND BEFORE THE SIGNATURE OF THE PERSON ASSESSING. THIS TEXT PROCESSING WINDOW HAS CONTROLS IN THE UPPER PART WHICH ALLOW SAVING THE COMMENT IN THE RICH TEXT

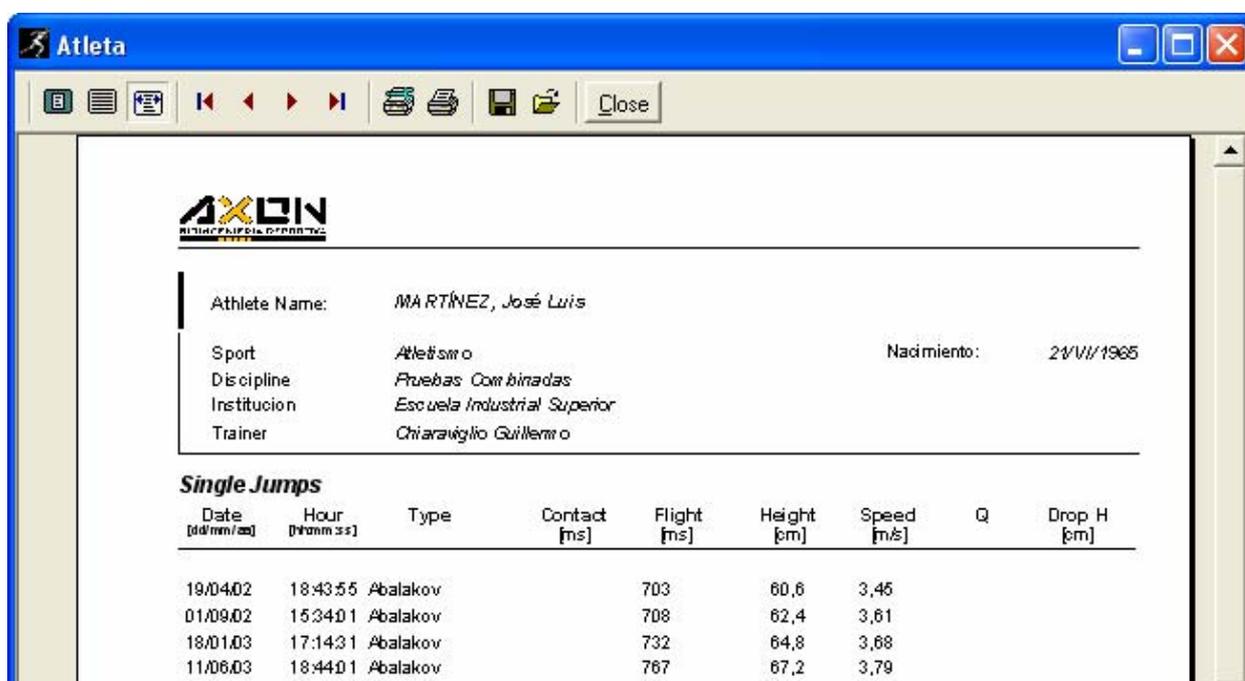


FORMAT **.RTF**. BESIDES, IT SHOWS THE FOLLOWING BUTTONS CONTAINING CLASSIC WINDOWS, FROM LEFT TO RIGHT: NEW, OPEN, SAVE, CUT, COPY, PASTE, UNDO, FONT, SIZE, BOLD, ITALICS, UNDERLINE, CENTER, ALIGN RIGHT, BULLETS AND FONT COLOR. THE UPPER ARROW REPRESENTS THE INDENTATION LEFT.

SIGNATURE OF THE TESTER: WHEN ACTIVATING THIS OPTION, A “SIGNATURE” WILL BE PRINTED AT THE END OF THE REPORT WHICH WILL INCLUDE THE NECESSARY DATA TO IDENTIFY THE AUTHOR OF THE REPORT. TO MODIFY THESE DATA, SIMPLY EDIT THESE FIELDS BY CLICKING ON THEM SO AS TO BE ABLE TO TYPE THE CORRESPONDING DATA. THIS INFORMATION WILL BE AUTOMATICALLY SAVED IN THE HARD DISK WHEN CLICKING ON THE **SAVE SIGNATURE** BUTTON, WHICH IS ON THE RIGHT.

FINALLY, THERE ARE THE FOLLOWING THREE BUTTONS:

PREVIEW: WHICH LEADS TO THE REPORT MANAGEMENT WINDOW WITH THE REPORT LOADED AND READY TO PRINT. FROM THIS COMMAND, THE FINAL APPEARANCE THAT EACH OF THE REPORT PAGES WILL HAVE CAN BE SEEN. THIS TOOL IS VERY USEFUL SO AS TO SAVE PRINTING PAPER, SINCE EACH DETAIL CAN BE SEEN AND THE REPORT CAN BE MODIFIED ONCE AND AGAIN UNTIL IT IS IN ACCORDANCE WITH THE USER’S EXPECTATIONS.



THIS VERY SAME WINDOW IS THE ONE APPEARING WHEN A **REPORT FILE (.QRP)** IS OPENED. FROM THIS WINDOW IT IS POSSIBLE TO OPEN OTHER **.QRP** FILES, SEE THEM, ADAPT THEM FOR PRINTING AND PRINT THEM, AMONG OTHER THINGS. THE BUTTON BAR IN THIS WINDOW IS THE FOLLOWING:



FROM LEFT TO RIGHT, THESE BUTTONS DO THE FOLLOWING:

- **ZOOM TO FIT** IT ALLOWS VIEWING THE WHOLE PAGE WITHIN THE SCREEN.
- **100%** IT ALLOWS VIEWING THE REPORT FROM ONE MARGIN TO THE OTHER WITHIN THE SCREEN.



- **FIRST PAGE** IT SHOWS THE FIRST PAGE OF THE REPORT.
- **PREVIOUS PAGE** IT ALLOWS VIEWING PREVIOUS PAGE.
- **NEXT PAGE** IT ALLOWS VIEWING THE PAGE THAT FOLLOWS THE ONE WE ARE VIEWING.
- **LAST PAGE** IT ALLOWS SEEING THE LAST PAGE OF THE REPORT.
- **PRINTER SETUP** IT LEADS TO A DIALOG WINDOW TO SET UP THE PRINTER, WHICH WILL DEPEND ON THE TYPE AND BRAND OF THE PRINTER INSTALLED IN THE SYSTEM. HERE THE SIZE AND QUALITY PAPER CAN BE SET, AS WELL AS MARGINS AND OTHER PRINTING FEATURES.
- **PRINT** IT SENDS THE PRINTER THE PRINTING ORDER SO AS TO BE ABLE TO PRINT DIRECTLY FROM THIS WINDOW.
- **SAVE REPORT** IT ALLOWS SAVING THE REPORT IN THE QUICK REPORT FILE (.QRP) FORMAT TO BE ABLE TO PRINT IT AT ANY OTHER TIME AS IT WAS CREATED. THESE FILES USE (WITHOUT INCLUDING GRAPHS) ABOUT 500KBYTES, HOWEVER, IT IS POSSIBLE TO WINZIP THEM AT 85 % APPROXIMATELY USING THE WINZIP®, FREELY DISTRIBUTED IN THE INTERNET, AND WHICH IS SUPPLIED IN THE AXON JUMP CD.
- **LOAD REPORT** IT ALLOWS LOADING A REPORT SAVED IN THE .QRP FORMAT. THIS OPTION EVEN ALLOWS LOADING A REPORT BELONGING TO ANOTHER ATHLETE PREVIOUSLY CREATED AND SAVED AND PRINTING IT AT THAT MOMENT.
- **CLOSE** IT CLOSES THE DIALOG WINDOW OF REPORT MANAGEMENT.

PRINT: IT PRINTS THE REPORT WITH THE OPTIONS ALREADY SELECTED BY THE USER, AND AS IT HAS BEEN SEEN IN PREVIEW.

EXIT: IT CLOSES THE WINDOW WITHOUT PRINTING.

4.7. EXPORT TO OTHER PROGRAMS

THE DATA SAVED CAN BE EXPORTED TO OTHER PROGRAMS. THE MOST DIRECT WAY TO DO THIS IS USING THE **WINDOWS NOTEPAD**. TO DO THIS, GO TO THE SEE “**ALL THE FILES**” IN THE WINDOW APPEARING WHEN SELECTING MENU/OPEN SO THAT ALL THE .ATL WILL BE LISTED. THEN, IT IS POSSIBLE TO SELECT ONE OF THEM AND VIEW ALL THE DATA SAVED, EDIT AND TRANSPORT THEM TO ANOTHER FORMAT.

ALSO, THEY CAN BE VIEWED USING ANY SOFTWARE LIKE EXCEL OR LOTUS OR QPRO, SELECTING THE OPTION “**COMMA DELIMITED VALUES**” (**GDV FILES**) IN **OPEN FILE** OF TEXT TYPE OR ASCII.



5. APPENDIX

5.1. TECHNICAL DATA

MAT

MEASUREMENTS

T MODEL

UNFOLDED: 102 x 81 x 0.5 CMS.
 FOLDED: 33 x 81 x 2 CMS.

C MODEL

UNFOLDED: 138 x 81 x 0.5 CMS.
 FOLDED: 33 x 81 x 4 CMS.

S MODEL

UNFOLDED: 103 x 82 x 0.5 CMS.
 FOLDED: 33 x 41 x 5 CMS.

WEIGHT:

T MODEL

7.300KGS.

C MODEL

9.800KGS.

S MODEL

7.400KGS.

MINIMUM PRESSURE:

100 G/ CM² APPROXIMATELY

OUTER MATERIAL:

PVC WITH TEXTILE BASE

CONNECTION:

2 RCA ♀

CONNECTION CABLE

LENGHT:

3.6 MTS

TYPE OF CONNECTION:

2 RCA ♂

CONNECTOR

PORT:

1 OR 2 PARALLEL (SELFDTECTED BY THE SOFTWARE)

TYPE OF CONNECTION:

DB25 ♂ - RCA ♀

INTERCONNECTION CABLE BETWEEN MATS (FOR EXTRA MATS)

MEASUREMENT:

10 MTS.

TYPE OF CONNECTION:

2 RCA ♂

LENGTHENING CABLES (OPTIONAL)

MEASUREMENT:

20 MTS. OR TAILOR-MADE

TYPE OF CONNECTION:

RCA ♀ - RCA ♂

SOFTWARE

TEMPORAL RESOLUTION: 1 MILLISECOND

SPORT TEST PROTOCOLS: **SINGLE JUMPS**

MAX WITH LEFT, RIGHT OR BOTH

ABALAKOV

CMJ WITH OR WITHOUT LOAD

SQUAT JUMP WITH OR WITHOUT LOAD

ROCKET JUMP

DROP JUMP WITH VARIABLE HEIGHT

CONTINUOUS JUMPS

BY NUMBER OF JUMPS

BY TIME

BOUNCE

ON ONE LEG WITH LEFT OR RIGHT



PROGRAMMABLE CHRONOMETER

ACTIVATED AT TOUCHING DOWN, TAKING OFF OR BOTH

SPEED

STARTING IN A RUNNING CONDITION
STARTING FROM THE MAT

SKIPPING FREQUENCY

MAXIMUM IN 10 SECONDS
TIME PROGRAMMING

UPPER LIMBS PLYOMETRICS

PUSH-UPS
VERTICAL

TRAINING SESSIONS:

PLYOMETRIC WITH VARIATIONS IN:

VOLUME
INTENSITY
PAUSES
VISUAL FEEDBACK

5.2. TROUBLESHOOTING

WHAT TO DO IF THE PROGRAM DOES NOT RECOGNIZE THE MAT

FIRST OF ALL, CHECK THAT THE PC IS FREE FROM ANY VIRUS AND HAS NO PROBLEMS IN THE HARD DISK (RUN SCANDISK). IF YOU THINK THE SOFTWARE IS THE PROBLEM, UNINSTALL IT AND INSTALL THE LAST VERSION DOWNLOADING IT FROM THE INTERNET.

IF EVERYTHING IS PROPERLY CONNECTED AND THERE IS NO SIGNAL FROM THE MAT IN THE PC, YOU WILL HAVE TO CHECK IN WHICH OF THE 5 ELEMENTS OF THE PC-PROGRAM-CONNECTOR-CABLE-MAT CHAIN THE PROBLEM IS LOCATED.

1. AS A FIRST MEASURE, RESET THE MACHINE AND LAUNCH THE PROGRAM AGAIN, ONLY WITH THE CONNECTOR FIRMLY PLUGGED IN (WITHOUT THE CABLE) AND TRY REACHING THE **MAT TEST** DIALOG.

- IF A WINDOW INDICATING THE DEVICE CANNOT BE FOUND APPEARS, CHECK THE PARALLEL CONNECTOR, IT MAY BE DIRTY OR HAVE A LOOSE OR BENT PIN.

- IF IT IS PROPERLY CONNECTED AND CLEAN BUT THIS MESSAGE CONTINUES APPEARING, TRY INSTALLING THE PROGRAM IN ANOTHER COMPUTER, THE INTERNAL CABLE OF THE PARALLEL PORT MAY BE LOOSE.

- IF THE JUMPING MAN SYMBOL APPEARS, USE A METAL CLIP, INTRODUCE ONE OF ITS TIPS INSIDE THE CONNECTOR IN ORDER TO CONTACT ITS INNER PART, AND WITH THE OTHER TIP, TRY MAKING CONTACT IN THE OUTER METAL PART. IF THE MAN JUMPS THE CONNECTOR IS IN PERFECT CONDITION, SO MOVE ON TO STEP 2.

- IF THE FOLLOWING SYMBOL APPEARS, CONTACT US SO AS TO HAVE THE CONNECTOR REPLACED, SINCE IT MEANS IT IS BROKEN.



2. NOW CONNECT THE CABLE IN THE CONNECTOR WITHOUT THE MAT, AND TOUCH THE CONDUCTORS AT THE OTHER END WITH A METAL OBJECT. IF THE LITTLE MAN JUMPS, GO TO STEP 3. IF HE DOES NOT, THE CABLE IS CUT, SO REPLACE IT BY A MICROPHONE CABLE WITH SIMILAR CHARACTERISTICS.

3. CONNECT THE MAT TO ONE OF ITS CONNECTORS. CHECK THE OTHER. IF THE LITTLE MAN IS ON THE FLOOR, THE MAT MAY BE SHORT-CIRCUITING. TRY SOLVING THIS BY ZIGZAG-FOLDING THE MAT AND PLACING IT UPRIGHT AS IF IT WERE A DECK OF CARDS.



TRY MOVING ITS CELL IN THIS POSITION. OPEN IT AND CONNECT IT AGAIN. IF THIS TEST DOES NOT, THE MAT MAY HAVE A FAILURE, SO CONTACT AXON TO HAVE IT SERVICED.

5.3. GUARANTEE

THE SYSTEM HAS A 6-MONTH GUARANTEE STARTING THE MOMENT IT IS PURCHASED. THIS GUARANTEE COVERS MANUFACTURING FAILURES OR ANY OF ITS COMPONENTS (MAT, CABLE, CONNECTOR OR CD) DOES NOT WORK PROPERLY. IT ALSO COVERS ANY DAMAGE CAUSED BY REGULAR USE, AS LONG AS THE PRECAUTIONS LISTED IN SECTIONS [2.6.](#) AND [2.7.](#) OF THIS MANUAL HAVE BEEN TAKEN.

THE GUARANTEE WILL NOT BE VALID IF THE CONTACT MAT HAS BEEN INTENTIONALLY OPENED OR CUT BY UNAUTHORIZED PERSONNEL. THE SAME IS VALID FOR THE CONNECTOR AND CABLES.

THE WAYS OF SENDING AND RECEIVING THE CONTACT MAT BACK AS WELL AS ANY OF ITS COMPONENTS TO BE SERVICED AND THE EXPENSES INCURRED ARE THE BUYER'S RESPONSIBILITY. THESE WILL BE AGREED OVER THE PHONE OR E-MAIL, WHICH CAN BE FOUND IN [SECTION 5.6.](#)

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[GUILLERMO CREUS](#) SOUTH AMERICAN RELAYER 4X400MTS, BOGOTÁ 2000. 4X100MTS AND 4X400 MTS NATIONAL CHAMPION; 4TH PLACE (3 TIMES) IN NATIONAL CHAMPIONSHIPS, 2001, 2002 AND 2003. 21.73s IN 200MTS (YOUTH TOURNAMENT).

[ERASMO JARA](#) PAN-AMERICAN CHAMPION AND YOUTH TOURNAMENT SOUTH AMERICAN RUNNER-UP IN HIGH JUMP, 2.21MTS 1995; 6TH PLACE IN PAN-AMERICAN GAMES IN WINNIPEG 1999; 3RD PLACE IN SOUTH AMERICAN GAMES IN BOGOTÁ 1999; 4TH PLACE (3 TIMES) IN IBERO-AMERICAN GAMES IN 1996, 1998 AND 2000; ABSOLUTE ARGENTINIAN CHAMPION FROM 1995 TO 2003. 2.25MTS. ABSOLUTE ARGENTINIAN RECORD.

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5.6. VERSION / WHO WE ARE AND HOW TO CONTACT US

V2.01 MARCH 2005

WE ARE ARGENTINIAN BIOENGINEERS WHO ACCEPT AND FACE THE CHALLENGE OF PIONEERING THE AREA OF NEW TECHNOLOGIES APPLIED TO SPORT.

OUR PASSION FOR BIOMECHANICS AND SPORT MADE US FOUND **AXON BIOINGENIERÍA DEPORTIVA®**.

WE WANT TO GIVE PRACTICAL SOLUTIONS TO THE INCREASING REQUEST FOR TECHNOLOGY FOR SPORT, AIMING AT MORE RATIONAL, MORE PERSONALIZED AND MORE HUMAN SPORT. WE WANT SCIENCE APPLIED TO ITS PUREST STATE.

OUR FIRST EXPERIENCES AS REGARDS SPORTSPEOPLE'S BIOMECHANICAL TESTING STARTED IN 1993, AND WE HAVE CONTINUED WORKING UNINTERRUPTEDLY UP TO DATE IN ELITE ATHLETES BIOMECHANICAL TESTING. IN 1997 WE STARTED DEVELOPING THIS FIRST PRODUCT AND WE WILL CONTINUE DEVELOPING OTHERS SOON. THERE HAVE BEEN MANY HOURS DEVOTED TO STUDY, COMPONENTS AND MATERIAL TESTS SINCE THEN, AS WELL AS ENGINEERING KNOWLEDGE INVESTED IN DEVELOPING THIS SOFTWARE.

WE WELCOME ALL TYPES OF SUGGESTIONS AND CRITICISM TOWARDS OUR PRODUCT. WE BELIEVE THIS FEEDBACK WITH OUR USERS WILL LEAD US TO AN EVEN BETTER PRODUCT.

THE MAT DESIGNS **PATENT** IS CURRENTLY BEING TAKEN OUT.

THE **AXON JUMP V.2.01** SOFTWARE HAS BEEN REGISTERED AND ITS USE IS **FREE OF CHARGE**.

"AXON BIOINGENIERÍA DEPORTIVA" AND **"AXON JUMP"** ARE TRADEMARKS.



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