

# *Determining the EFFECT OF PHYSICAL ACTIVITY IN THE EQUILIBRIUM OF ARTERY HYPERTENSION*

## *ABSTRACT :*

Arterial hypertension (HTA) is the most common cardiovascular disease in our context. Physical training considerably reduces systolic and diastolic blood pressure, therefore regular physical activity is recommended in cases of high blood pressure (HTA), the level of this activity remains poorly known.

The aim of our work was to study the relationship between physical activity **The effect of physical activity in balancing blood pressure** as well as the epidemiological and clinical aspects in hypertensives in Moroccan hospitals.

This was a descriptive retrospective study conducted over a period of 2 years in the cardiology department of CHU Ibn Rochd. It concerned the subjects, known hypertensives, followed in the service during the study period.

227 hypertensive patients followed during this period Systolic hypertension was the most frequently reported. Median arterial pressure was **142.03** mmHg for the systolic, and **77.43** mmHg for the diastolic.

The symptom most reported by patients was dyspnea on exertion (**11.01%**).

Left ventricular hypertrophy was present in **10.13%** of cases.

Our study suggests a tendency to greater declared physical activity for subjects whose hypertension is controlled.

Keywords: Physical activity; High blood pressure

## *1-Introduction*

Arterial hypertension (HTA) is a major public health problem in developing countries. it would affect 10 to 15% of the adult population in the Maghreb [1][ 2].

It is associated with an increased incidence of all-cause mortality, sudden death, coronary artery disease, peripheral arterial disease and renal failure [5] and stroke [6],

Hypertension is defined by systolic blood pressure (SBP)  $\geq 140$  mmHg and/or diastolic blood pressure [DBP]  $\geq 90$  mmHg (Table 1), or by taking antihypertensive treatment [3]. Its worldwide prevalence is about 25% [4].

Several studies have shown a hypotensive effect of physical exercise in hypertensive subjects which reaches up to 8.3/5.2 mmHg for systolic/diastolic blood pressure in clinical measurements [7].

The improvement in the physical capacity of initially inactive adults compared to subjects who remained inactive is associated with a 60% reduction in their mortality [8].

This retrospective study conducted in a hospital environment, at the CHU IBN ROCHD (Casablanca), with the aim of studying the influence of physical exercise in the management of arterial hypertension in a Moroccan population.

## *2-Patients and methods*

This was a descriptive retrospective study, by documentary review, carried out over a period of 2 years as part of a regular annual follow-up of hypertensive patients, including 227 patients, followed in the Cardiology department of CHU Ibn Rochd of Casablanca.

### 2-1 Selection criteria:

Data collection consisted of an analysis of patient records. The data was collected using a data collection sheet which included all the variables on hypertension.

Sociodemographic, clinical, therapeutic data, cardiovascular risk factors were collected during an individual interview coupled with the measurement of constants, the existence or not of associated chronic pathologies such as diabetes and dyslipidemia

### 2.2 Blood pressure measurement and evaluation of the level of physical activity:

Blood pressure was measured during the consultation according to the recommended procedures [9].

During the consultation, a Microlife device with a cuff adapted to the perimeter of the arm, measurements taken at rest for at least 5 minutes, in a seated position, legs not crossed.

Patients were asked to note their daily physical activities on a dedicated form, activities practiced both professionally and personally, daily tasks, leisure, or sports [10].

Considered as significant physical activity in our study: a walk of at least 30 minutes [11]

### 2-3 Sampling:

All patients who presented during the study period and who met the inclusion criteria were retained.

2-4 Data Collection: This work is a retrospective study, the data were collected on the files of the cardiology department at the CHU Ibn Rochd. The principle of anonymity and confidentiality in relation to patient information has been respected

### 2-5 Statistical analysis:

We divided the study population into 2 groups according to whether their hypertension was controlled or not: a group of controlled subjects with a PAS/PAD < 140/90 mmHg, a group of uncontrolled subjects with a PAS/PAD  $\geq$ 140/90 mmHg (classification of hypertension according to WHO), as well as according to physical activity, the population was divided into three; subgroups detail in the results of the study.

A simple descriptive analysis was performed on the entire study population. The results are expressed in frequency for qualitative variables or in mean + standard deviation for quantitative variables

Pearson's chi-square test and Fisher's exact test were used for comparison of percentages. Statistical significance was reached when  $p < 0.05$ .

## *3-Results*

A total of 227 hypertensive patients were included during the study period.

Our population was predominantly female with 182 women and 45 men, i.e. 80.17% in

favor of women (Figure 1) and a sex ratio of 4.04. The average age was 61.12 years (extremes 34 and 87 years).

Diabetics 38.32% (i.e. 87 patients), dyslipidemics 36.12% (i.e. 82 patients), smokers 6.60% (i.e. 15 patients), renal failure 5.72% (i.e. 13 patients), alcoholics 2.20% (i.e. 05 patients), dyspnea of effort was the most frequently reported symptom (25 patients or 11.01%), 23 patients had left ventricular hypertrophy (or 10.13%).

Blood pressure goals achieved in 150 patients (66.07%), while 77 patients (33.92%) hypertension was insufficiently treated (table 2).

Cardiovascular disease (cardiopathy, arteriopathy or stroke) 17.62% (i.e. 40 patients).

Antihypertensive treatment was observed in the following proportions: 26.43% under monotherapy, 55.06% under dual therapy, 12.77% under triple therapy, 5.72% under quadruple therapy, ACE inhibitors and calcium channel blockers were mainly prescribed, respectively in 48.89% and 39.20% of cases.

The other therapeutic classes were made up of: diuretics 25.11%, angiotensin II receptor antagonists 14.09%. Beta blockers were prescribed in 22.02% for coronary artery disease.

Regarding the evaluation of the physical activity levels of the subjects, we divided the population into 4 subgroups:

- subgroup (1) one physical activity/week, i.e. 24.22% (55 patients) of our study population
- subgroup (2) two activities/week, i.e. 32.59% (74 patients)
- subgroup (3) three physical activities/week, i.e. 25.55% (58 patients)
- subgroup (4) more than three physical activities/week, i.e. 17.62% (40 patients).

## Distribution of patients with a controlled blood pressure profile in the 4 subgroups (Figure 2):

- subgroup 1: 61.81% (i.e. 34 patients),
- subgroup 2: 64.86% (i.e. 48 patients)
- subgroup 3: 67.24% (i.e. 39 patients)
- subgroup 4: 72.5% (i.e. 29 patients)

## 4-Discussion

Hypertension is a major cardiovascular risk factor, its balance is essential and reduces the risk of cardiovascular complications and mortality in hypertensive patients.

During this study, we observed a female predominance 182 women (80.17%), with a sex ratio of 4.04 in favor of women. This result was observed by J. MARTIONI [12] who found a female/male ratio of 2.64. This seems more consistent with African demography characterized by a higher life expectancy among women.

Any regular physical activity such as walking (activity used in our study) that can be sustained over a prolonged period can be recommended to prevent or treat hypertension [13].

Daily physical activity of 30 minutes is recommended, supplemented by muscle-strengthening exercises two to three times a week [14].

Although the exact type and intensity of physical activity remains a matter of controversy; the practice of moderate-intensity physical activity improves blood pressure figures, with a reduction in PAS and PAD of approximately 3 to 4 mmHg, but this effect is only maintained if physical activity is regular and continued over the long term. course [15].

In our study we noted 11.89% of grade 3 hypertension, showing the severity of this condition in the Moroccan population. this

result is similar to that of Ba in Mauritania [16], which reported a frequency of 20.8%

## 5-Conclusion

Hypertension remains an independent and modifiable risk factor for the development of cardiovascular disease, thus constituting a major public health problem.

The results of our study suggest a trend towards greater reported physical activity for subjects with controlled hypertension, thus emphasizing the preventive and therapeutic value of regular physical activity.

### Ethical Approval:

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

### Consent

As per international standard or university standard, patients' written consent has been collected and preserved by the author(s).

## Figures and Table

Table 1: classification of hypertension according to WHO

Table 2 : distribution of patients according to controlled or uncontrolled character

Figure 1: Distribution of patients by gender

Figure 2: Distribution of patients with a controlled blood pressure profile in the 4 subgroups

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**Table 1: classification of hypertension according to WHO**

category	PAS (mmHg)	PAD (mmHg)
optimal	<120	and <80
Normal	120-129	and /or 80-84
normal high	130-139	and /or 85-89
HTA grade I	140-159	and /or 90-99
HTA grade II	160-179	and /or 100-109
HTA grade III	≥180	and /or ≥110
Isolated systolic hypertension	≥ 140	and <90

**Table 2 : distribution of patients according to controlled or uncontrolled character**

category	Patients	Percentage (%)
controlled	150	66.07
uncontrolled	77	33.92

**Figure 1: Distribution of patients by gender**

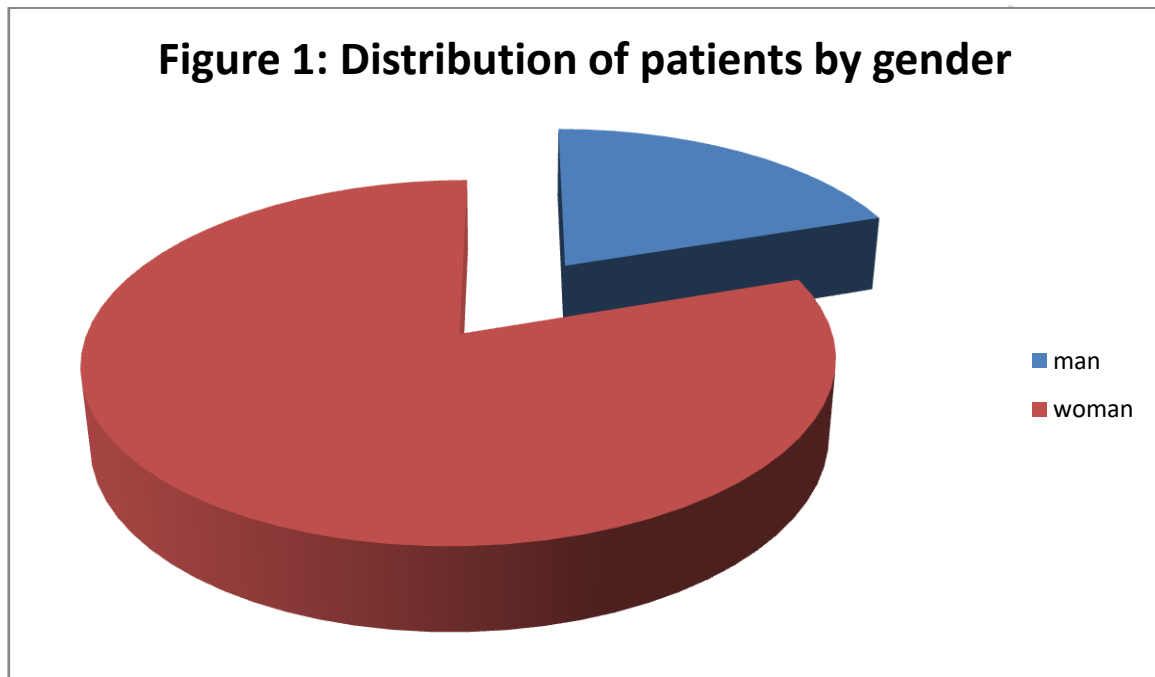
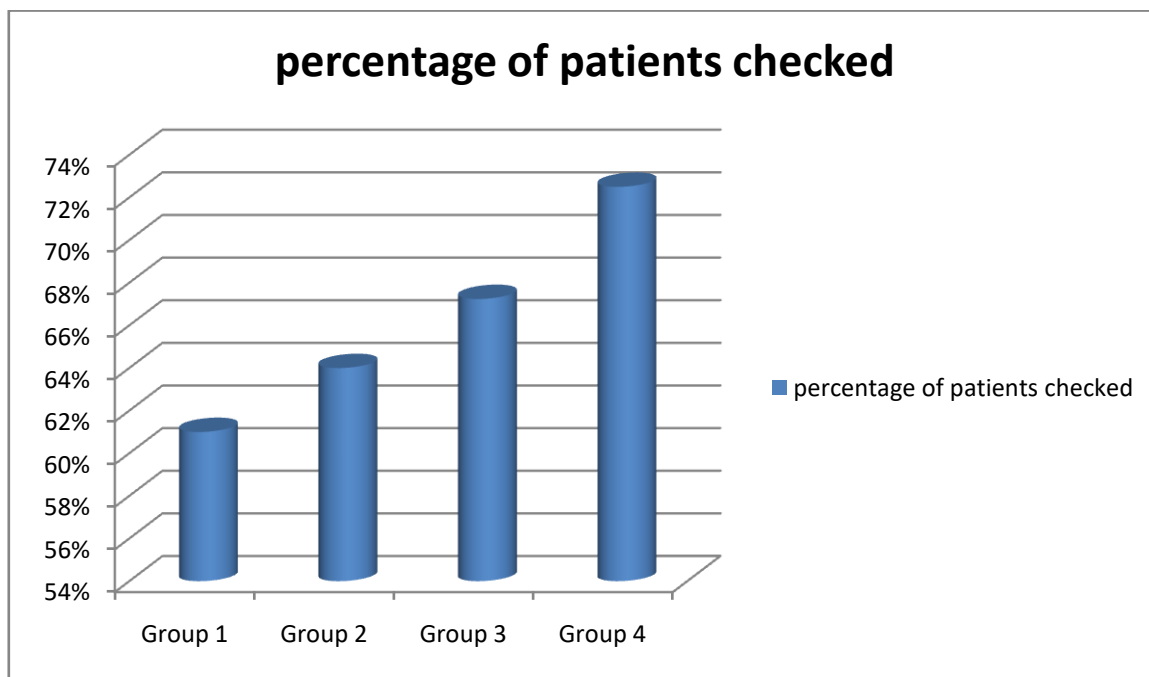


Figure 2: Distribution of patients with a controlled blood pressure profile in the 4 subgroups



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