

## CREATINE.

### INTRODUCTION:

CREATINE USAGE IS IN THE SPOTLIGHTS NOWADAYS. MANY SPORTSMEN AND -WOMEN ARE ALREADY USING IT OR ARE ABOUT TO USE IT. THEY ASK ABOUT THE PROPER DOSAGE, THE RISKS AND CONSEQUENCES REGARDING ANTIDOPING POLICIES.

### PHARMACOLOGY:

CREATINE IS A NATURAL DERIVATIVE OF AN AMINO ACID AND IS SYNTHESIZED IN THE LIVER, KIDNEYS AND PANCREAS OUT OF ARGININE, METHIONINE AND GLYCINE. IT ALSO CAN BE TAKEN FROM FOODS ESPECIALLY IN RED MEAT AND FISH. THE AMOUNT OF CREATINE IN AN AVERAGE DIET IS 1-2 GRAMS EACH DAY. CREATINE IS REMOVED FROM THE BODY BY THE KIDNEYS AS CREATININE.

### EXERCISE-PHYSIOLOGY:

CREATINEPHOSPHATE IS AN IMPORTANT ENERGY CARRIER AND TAKES CARE OF BUILDING ATP (ADENOSINE TRI PHOSPHATE) FROM ADP (ADENOSINE DI PHOSPHATE). CREATINEPHOSPHATE SUPPLIES ENERGY FOR A SHORT ACTING (10 SECONDS) BUT HIGH INTENSIVE ACTIVITY. IN AN EXERCISE PHYSIOLOGICAL WAY OF SPEAKING IT IS RESPONSIBLE FOR THE ANAEROBIC ALACTIC PART OF ANY EXERCISE. THEREAFTER THE LACTIC SHUTTLE AND AEROBIC (KREBS CYCLE ORIENTED) SYSTEM TAKE OVER. A WELL TRAINED CREATINE SYSTEM PUTS LESS PRESSURE ON THE LACTIC SHUTTLE, SO LESS LACTIC ACID ARISES. THIS COUNTER ATTACKS METABOLIC ACIDOSIS (MUSCLE ACIDIFICATION). THEREFORE CREATINE CAN BE SEEN AS A LACTIC BUFFER.

### SPORTS-PHYSIOLOGY:

AS WELL IN STUDIES AS FROM FIELD WORK PEOPLE KNOW THAT CREATINE WORKS ! BUT ONLY IN SEVERAL TYPES OF SPORTS, WHICH MAINLY DEPEND ON THIS CREATINE SYSTEM. EXAMPLES ON THESE SPORTS ARE RUGBY, SOCCER AND ATHLETICS LIKE 100 M DASH AND JAVELIN. OTHERS SPORTS WITH EXPLOSIVE POWER ELEMENTS CAN ALSO BENEFIT FROM CREATINE LIKE BODY-BUILDING, BASEBALL, VOLLEYBALL AND BASKETBALL. IN TODAY'S SPORTSLITERATURE CREATINE IS WELL-KNOWN. AT THIS VERY MOMENT CREATINE DOES NOT APPEAR ON THE IOC'S LIST OF BANNED SUBSTANCES (YET ?).

## DOSAGE:

TWO THEORIES ARE KNOWN. THE FIRST IS AN *INTERMITTENT DOSAGE*, IN WHICH THE ATHLETE LOADS HIMSELF - OR HERSELF - UP WITH CREATINE FOR 4 TO 5 DAYS WITH HIGH LOADS OF CREATINE (STACKING). THIS IN ADVANCE TO AN IMPORTANT TOURNAMENT OR MATCH. AFTER THIS 2-3 WEEKS NO CREATINE SHOULD BE TAKEN. DAILY DOSAGE AROUND 2-3 GRAM EACH 10 KILOGRAM OF BODYWEIGHT. MAINLY THIS IS AROUND 20-30 GRAMS A DAY, WHICH SHOULD BE DIVIDED OVER 4 TO 5 TIMES PREFERABLE EACH MEAL. ANOTHER THEORY IS *CONTINUOUS LOW DOSE CREATINE*. ONE DAILY DOSE OF 2-3 GRAMS EACH DAY. THE EFFECT OF THIS REGIME MAY A BIT LESS AND MAY BE MORE EXPENSIVE. CAFEÏNE IN COFFEE OR EVEN TEA REDUCES OR ELIMINATES THE EFFECT OF CREATINE, SO TAKE DECAFENATED COFFEE OR TEA WHILE USING CREATINE.

## SIDE EFFECTS:

SOME SIDE EFFECTS HAVE BEEN REPORTED. ALMOST EVERYONE GAINS BODYWEIGHT DUE TO AN INCREASE OF WATERRETENTION. FOR THIS REASON EXERTIONAL PAIN PROBLEMS CAN ARISE KNOWN AS A CHRONIC COMPARTMENT PRBLEM, ESPECIALLY IN RUNNERS. SOMETIMES A LONGLASTING DIARRHEA OCCURS, WHICH STOPS WHEN THE PERSONS STOPS TAKING CREATINE. DOCTORS HAVE TO BE AWARE OF THE FACT THAT SERUMCREATININE - A DEGRADATION PRODUCT OF CREATINE - EXCRETED BY THE KIDNEY CAN BE ELEVATED CAUSED BY EXCESSIVE INTAKE OF CREATINE. THIS DOES NOT HAVE ANYTHING TO DO WITH RENAL FAILURE !